



# Factors associated with selection of smoking cessation methods in smokers, Bangkok.

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## Abstract

**Objective:** To study the opinions on selection of smoking cessation methods in smokers and the association between general data and the most selected method of smoking cessation in smokers in Bangkok.

**Methods:** The samples were the smokers who lived in Bangkok. There were 332 samples selected by snowballing sampling method. The research tools were the questionnaires constructed by the researchers. The questionnaires consisted of 16 questions of opinions in selection of smoking cessation methods with 'selected' and 'not selected' answers. Data collection was conducted by self-administered questionnaires. The data were analyzed by percentage and  $\chi^2$ -test.

**Results:** It was found that the opinions on selection of each of the smoking cessation methods in smokers were at moderate and low levels. The three most selected smoking cessation methods were: 1) Smoking cessation medication (67.1%) 2) Nicotine replacement therapy (NRT) in the form of nicotine chewing gum (61.7%) and 3) Sodium nitrate mouthwash (61.1%). The eight factors of age, occupation, income, education levels, marital status, closed people smoked, history of smoking cessation effort and levels of nicotine addiction were associated with the most selected smoking cessation method (smoking cessation medication) with statistical significance at 0.05 and 0.01.

**Conclusion:** The smokers in Bangkok selected smoking cessation medication as the most smoking cessation method. The factors which were associated with the selection methods were age, occupation, income, education level, marital status, closed people smoked, history of effort to quit smoking and levels of nicotine addiction.

**Keywords:** smokers, quit smoking, smoking cessation



# ปัจจัยที่มีความสัมพันธ์กับการเลือกวิถีเลิกบุหรี่ของประชาชนในกรุงเทพมหานคร

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## บทคัดย่อ

**วัตถุประสงค์การวิจัย:** เพื่อศึกษาความคิดเห็นของประชาชนกรุงเทพมหานครต่อการเลือกวิถีเลิกบุหรี่และศึกษาปัจจัยที่มีความสัมพันธ์กับวิถีเลิกบุหรี่ที่ถูกเลือกมากที่สุดอันดับแรก ของประชาชนกรุงเทพมหานคร

**วิธีดำเนินการวิจัย:** กลุ่มตัวอย่าง คือ ผู้สูบบุหรี่ที่พักอาศัยอยู่ในกรุงเทพมหานคร สุ่มตัวอย่างโดยวิธีบอกต่อ (snow balling sampling) จำนวน 332 คน เครื่องมือวิจัยเป็นแบบสอบถามที่ผู้วิจัยสร้างขึ้นเอง ลักษณะข้อคำถามของแบบสอบถามความคิดเห็นของผู้สูบบุหรี่ต่อการเลือกวิถีเลิกบุหรี่ ในแต่ละข้อ (วิถี) มีข้อความให้เลือกตอบ เลือก ไม่เลือก มีจำนวนทั้งหมด 16 ข้อ เก็บรวบรวมข้อมูลโดยให้กลุ่มตัวอย่างตอบแบบสอบถาม วิเคราะห์ข้อมูลด้วยค่าร้อยละ และ  $\chi^2$ -test

**ผลการวิจัย:** พบว่า ประชาชนกรุงเทพมหานครมีความคิดเห็นต่อการเลือกวิถีเลิกบุหรี่ในแต่ละข้อ จากจำนวนทั้งหมด 16 วิธีที่ระบุในแบบสอบถาม อยู่ในระดับปานกลาง-น้อยมาก วิถีเลิกบุหรี่ที่ถูกเลือกมากที่สุด 3 อันดับแรก (ร้อยละ 67.1 - 61.1) อยู่ในด้านบำบัดรักษาด้วยยาจากแพทย์สั่ง ได้แก่ อันดับที่ 1 ใช้ยาเลิกบุหรี่จากแพทย์สั่ง (ร้อยละ 67.1) อันดับที่ 2 ใช้ยาบำบัดนิโคตินทดแทน-รูปหมากฝรั่ง (ร้อยละ 61.7) และอันดับที่ 3 ใช้น้ำยาบ้วนปากโซเดียมไนเตรด (ร้อยละ 61.1) ปัจจัยที่มีความสัมพันธ์กับวิถีเลิกบุหรี่โดยการใช้อยาเลิกบุหรี่จากแพทย์สั่ง (ถูกเลือกมากที่สุดอันดับแรก) อย่างมีนัยสำคัญทางสถิติที่ระดับ 0.05 และ 0.01 มี 8 ตัวแปร คือ อายุ อาชีพ รายได้ ระดับการศึกษา สถานภาพสมรส ประวัติมีบุคคลใกล้ชิดสูบบุหรี่ ประวัติเคยพยายามเลิกบุหรี่ และระดับการตัดสินใจของผู้สูบบุหรี่

**สรุป:** ประชาชนในกรุงเทพมหานครเลือกวิถีเลิกบุหรี่มากที่สุดอันดับแรก คือ การใช้อยาเลิกบุหรี่จากแพทย์สั่ง โดยปัจจัยที่มีความสัมพันธ์กับวิถีเลิกบุหรี่ - การใช้อยาเลิกบุหรี่จากแพทย์สั่ง อย่างมีนัยสำคัญทางสถิติที่ระดับ 0.05 และ 0.01 มี 8 ตัวแปร คือ อายุ อาชีพ รายได้ ระดับการศึกษา สถานภาพสมรส ประวัติมีบุคคลใกล้ชิดสูบบุหรี่ ประวัติเคยพยายามเลิกบุหรี่ และระดับการตัดสินใจของผู้สูบบุหรี่

**คำสำคัญ:** ผู้สูบบุหรี่ เลิกบุหรี่ การหยุดสูบบุหรี่

## Introduction

At present, the world population who smoke include teenagers, working people and elderly. In 2015 there were 1.1 billion people who smoked with more male smokers than female smokers In USA<sup>1-2</sup>, the country with highly developed technology, economics, social and education, there were 34.3 million adults (14.0%)<sup>3</sup> who smoked. In 2017, there were 10.7 million people of 15 years and older (19.1%)<sup>4</sup> in Thailand who smoked. Smoking is the direct cause of preventable death. Globally, there were 6 million people who died from toxins in cigarettes each year or one death every 5 seconds with 25% of deaths were from heart diseases<sup>3,5</sup> and 75% from pulmonary diseases. The number of deaths was more than tuberculosis, AIDS and Malaria. The impact at national level included annual budget for smoking related diseases. It is predicted that in 2030 the number of deaths will increase to 8 million people. Thai government and private sectors implemented various campaigns<sup>4</sup> for smoking cessation. For examples, the Department of Health, Ministry of Public Health, initiated 18 tobacco therapy clinics in public hospitals throughout Thailand. Independent researchers from various agencies also collaborated for the projects<sup>6</sup>.

From literature review in the last 10 years, there were numbers of international and national researches and experiments in smoking methods as the followings. 1) Smoking cessation medications<sup>7-8</sup> 2) Nicotine replacement therapy (NRT)<sup>9</sup> 3) NRT-nicotine chewing gum<sup>10-11</sup> 4) 0.5% Sodium nitrate mouthwash<sup>12-13</sup> 5) Vernonia cinerea capsules<sup>14</sup> 6) Counseling or combined with nicotine replacement therapy<sup>15</sup> 7) Self-cessation<sup>16-17</sup> 8) Motivation with counseling<sup>18</sup> 9) Application of the theory of behavior change for smoking cessation<sup>16</sup> 10) Individual or group advice for smoking cessation in cinerea capsules<sup>17-18</sup> 11) Avoidance of internal and external stimuli such as staying away from friends who smoke and reducing stress<sup>16-17</sup> 12) Encouraging automatic telephone<sup>19</sup> 13) Advice with 5As+5Rs<sup>20</sup>. From the above results, less than 60% were successfully quit smoking from the methods mention above. The experiments showed short term

smoking cessation and most samples withdrew during intervention. Only 50-68% of people intended to quit<sup>21-22</sup>. There should be the study of the most selected smoking cessation methods that the smokers chose for themselves. The researcher is interested in studying the selection of smoking cessation methods of Thai smokers to apply the results for counseling the smokers who attend the smoking cessation clinics and smokers in general to obtain effective and sustainable smoking cessation.

## Objectives

1. To study the opinions on selection of smoking cessation methods of smokers in Bangkok.
2. To study the association between general data and the most selected method of smoking cessation.

## Research design

Descriptive research design

## Samples

The samples were smokers who lived in Bangkok, during October 2017 to March 2018. The selection criteria were 1) smoking more than 1 year 2) male 3) age more than 18 years old 4) minimal education level of primary school and 5) willing to cooperate to answer questionnaires. The sample size was calculated by Yamane T<sup>23</sup> formula with 5% error and population  $N = \infty$  and yielded 299 samples. The researchers added 10% of the samples to prevent data loss and included 332 total samples. The snowballing sampling technique was conducted by searching for the first sample in each site who fulfilled the selection criteria and introduced the next sample. The sampling was continued until they reached 332 samples.

## Research tool

The questionnaires were constructed by the researchers and consisted of 2 parts. Part 1 was general data of the samples. Part 2 was the questionnaires of opinions of smokers on selecting smoking cessation methods. Each question contained 'selected' and 'not selected' answer. There were

16 questions of 3 categories; 1) Smoking cessation medication; 2) Medication with other methods; and 3) Self-cessation with other methods. The questionnaires were tested for quality in content validity and the reliability by KR-20 was 0.9.

**Data collection**

The researchers conducted the research by searching the first sample of smokers who fulfilled the selection criteria and introduced the next smoker. All samples were informed of the research objectives and were asked for consent. Then the samples freely answered the questionnaires by themselves.

**Data analysis**

The general data and the opinions on selection of smoking cessation methods were analyzed by percent and the association between general data and the most selected smoking

cessation method were analyzed by  $\chi^2$  -test.

**Protection of the samples’ right**

The research was ethically certified by Suan Sunandha Rajabhat University, Thailand (Certificate Number 1-027/2518). The researchers conducted the research with regard to confidentiality and the impact on the samples.

**Results**

From 332 samples of smokers in Bangkok, there were 46.7% of the samples who were 20-29 years old, 34.0% were employees, 45.5% had income of 10,001-15,000 Baht, 33.1% had education level of secondary/ vocational school, 45.5% were single, 64.8% had no closed persons in the families who smoked, 29.8% drank 3-5 drinks/ week, 59.9% had duration of smoking of 1-10 years, 68.7% never had smoking cessation effort and 39.1% were in the high and very high nicotine addicted group (Table 1).

**Table 1:**

General data and the association between general data and smokers’ opinions on the most selected smoking cessation method (drug therapy prescribed by doctors)

Items	n	%	smoking cessation medications				$\chi^2$ -test	p-value
			selected		not selected			
			n	%	n	%		
Age (years)								
20-29	155	46.7	91	27.4	64	19.3	7.7*	0.05
30-39	111	33.4	80	24.1	31	9.3		
40-49	47	14.2	34	10.2	13	3.9		
≤50-59	19	4.5	15	4.5	4	1.2		
Total	332	100.0	220	66.3	112	33.7		
Occupation								
Student	66	19.9	25	7.5	41	12.3	58.4**	0.00
Construction	12	3.6	7	2.1	5	1.5		
Driver	17	5.1	9	2.7	8	2.4		
Company employee	113	34.0	79	23.8	34	10.2		
Government official	5	1.5	4	1.2	1	0.3		
Own business	41	12.3	22	6.6	19	5.7		
Worker	38	11.4	36	10.8	2	0.6		
Agriculture	40	12.0	38	11.4	2	0.6		
Total	332	100.0	220	66.3	112	33.7		

Table 1:

General data and the association between general data and smokers' opinions on the most selected smoking cessation method (drug therapy prescribed by doctors) (Continue)

Items	n	%	smoking cessation medications				$\chi^2$ -test	p-value
			selected		not selected			
			n	%	n	%		
Income (Baht)								
Less than 10,000	51	15.4	27	8.1	24	7.2	22.4**	0.01
10,001-15,000	151	45.5	99	29.8	52	15.7		
15,001-20,000	60	18.1	38	11.4	22	6.6		
20,001-25,000	62	18.7	54	16.3	8	2.4		
25,000-50,000	8	2.4	2	0.6	6	1.8		
Total	332	100.0	220	66.3	112	33.7		
Marital status								
Single	151	45.5	80	24.1	71	21.4	23.4**	0.01
Married/ living Together	145	43.7	109	32.8	36	10.8		
Widow	15	4.5	13	3.9	2	0.6		
Divorce/separate	21	6.3	18	5.4	3	0.9		
Total	332	100.0	220	66.3	112	33.7		
Closed person smoked								
Yes	117	35.2	89	26.8	28	8.4	7.8*	0.02
No	212	64.8	131	39.5	84	25.3		
Total	332	100.0	220	66.3	112	33.7		
History of alcohol drink								
No	64	19.3	45	13.6	19	15.7	1.9	0.85
Drink everyday	52	15.7	33	9.9	19	15.7		
Drink 3-5/week	99	29.8	69	20.8	30	9.0		
Drink 1-2/week	62	18.7	39	11.7	23	6.9		
Drink 1-2/month	50	15.1	31	9.3	19	5.7		
Others	5	1.5	3	0.9	2	0.6		
total	332	100.0	220	66.3	112	33.7		

Table 1:

General data and the association between general data and smokers' opinions on the most selected smoking cessation method (drug therapy prescribed by doctors) (Continue)

Items	n	%	smoking cessation medications				χ <sup>2</sup> -test	p-value
			selected		not selected			
			n	%	n	%		
Smoking duration (yrs)								
1-10 ปี	199	59.9	128	38.6	71	21.4	4.9	0.18
11-20 ปี	75	22.6	48	14.5	27	8.1		
21-30 ปี	40	12.0	28	8.4	12	3.6		
31-40 ปี	18	5.4	16	4.8	2	0.6		
Total	332	100.0	220	66.3	112	33.7		
History of smoking cessation effort								
Never	228	68.7	161	48.5	67	20.2	6.2*	0.01
Yes	104	31.3	59	17.8	45	13.6		
Total	332	100.0	220	66.3	112	33.7		
Level of nicotine Addiction								
Not addicted	10	3.0	5	1.5	5	1.5	14.2**	0.01
Less	106	31.9	68	20.5	38	11.4		
Average	86	25.9	69	20.8	17	5.1		
High	103	31.0	58	17.5	45	13.6		
Very high	27	8.1	20	6.0	7	2.1		
total	332	100.0	220	66.3	112	33.7		

P ≤ 0.05\*, p ≤ 0.01\*\*

The samples' opinions on selection of each smoking cessation method were at moderate and very low levels (67.1-61.1%). The three most selected methods were in the items of drug therapy prescribed by doctors. They were 1) smoking cessation medication (67.1%) 2) nicotine replacement therapy (NRT) in the form of nicotine chewing gum (61.7%) and 3) sodium nitrate mouthwash (61.1%) (Table 2). When classified each of the 16 smoking cessation methods, it was found that there were 10 methods that were selected more than 50% (51.2-67.1%). They were 1) smoking cessation medication 2) NRT- nicotine chewing gum 3) sodium nitrate mouthwash 4) Vernonia cinerea capsule 5) abrupt cessation with medications 6) NRT with advice from health team

7) NRT with avoiding or accepting family problems, such as financial problem and family conflict 8) NRT with avoiding closed person who smoked 9) NRT with not allowing time to spare such as doing more work when wanting to smoke and 10) NRT- nicotine patch. (Table 2)

The association between general data and the most selected smoking cessation method (drug therapy prescribed by doctors) showed eight factors which had statistically significant association (at 0.05 and 0.01). The factors were age, occupation, income, education level, mental status, history of closed person who smoked, history of smoking cessation effort and nicotine addiction level (Table 1).

Table 2:

Opinion levels of smoking cessation methods of smokers in Bangkok, classified and sorted in descending order (n=332)

	Items	n	%	Opinion levels
<b>Drug therapy prescribed by doctors</b>				
1	Smoking cessation medication	223	67.1	Moderate
2	Nicotine replacement therapy (NRT) - nicotine chewing gum	205	61.7	Moderate
3	Sodium nitrate mouthwash	203	61.1	Moderate
4	Vernonia cinerea capsule	184	55.4	Low
5	Nicotine replacement therapy (NRT) - nicotine patch	169	50.9	Low
<b>Drug therapy and in combination with other methods</b>				
1	NRT with advice from health team	181	54.5	Low
2	NRT with avoiding or accepting family problems, such as financial problem and family conflict	179	53.9	Low
3	NRT with avoiding closed person who smoked	172	51.8	Low
4	NRT with not allowing time to spare such as doing more work when wanting to smoke	170	51.2	Low
5	NRT with avoiding working alone such as work shift or driving at night	125	37.6	very low
<b>Self-cessation with other methods</b>				
1	Abrupt cessation with medications	182	54.8	Low
2	Abrupt cessation with self – intention	138	41.5	very low
3	Abrupt cessation with avoiding or accepting family problems	114	34.3	very low
4	Abrupt cessation with avoiding being close to friends who smoke	110	33.1	very low
5	Abrupt cessation with not letting free time such as doing more work when wanting to smoke	109	32.8	very low
6	Abrupt cessation with avoiding work with less sleep or working alone such as work shift or driving at night	106	30.5	very low

## Discussion

The research results showed the smokers' opinions on smoking cessation methods at moderate and very low levels which were consistent with the sample characteristics. There were 68.7% of the samples who never tried to quit smoking, therefore they were not interested in medical treatment of smoking cessation. They were also at high and very

high levels of tobacco addiction (39.1%) and they would have withdrawal symptoms if they quit smoking. This was consistent with the Survey of National Institute on Drug Abuse<sup>21</sup> and Babb S, Malarcher A, Schauer G, Asman K, Jamal A.<sup>22</sup> studied who found 50-68% of the smokers intended to quit smoking.

When classified each of the 16 smoking cessation methods, it was found that there were 10 methods which were selected more than 50% (51.2-67.1%). And there were 8 of 10 methods that used NRT with other methods. They were smoking cessation medication, NRT- nicotine chewing gum, abrupt cessation with medications, NRT with advice from health team, NRT with avoiding or accepting family problems, NRT with avoiding being close to friends who smoke, NRT with not allowing time to spare and NRT- nicotine patch. The smokers selected NRT with other methods because they still were nicotine addicted. It was consistent with Heydari G, Masjedi M, Ahmady AE, et al<sup>24</sup>. studies who reviewed 780 publications of effective smoking cessation from PubMed during 2000-2012 and found 3 most selected methods from 17 methods. They were NRT, smoking cessation medication (Champix) and training. Other methods such as Behavior Therapy, abrupt cessation and self-cessation were selected at average level. It was similar to Ling PM, Glantz SA<sup>25</sup>. who found only 10-30% of smokers wanted abrupt cessation method. The smokers might think they were patients and preferred drug therapy from doctors to other methods. Advice from health team and abrupt cessation would need patience and took longer time. Most samples were young (age 20-29 years), had low income (1001-15000 Baht per month) and finished secondary or vocational schools. They would need NRT with other methods or drug therapy from doctors to be worth for their limited money. There were other research such as smoking cessation medication<sup>10-18</sup>, NRT<sup>5-7</sup>, intensive counseling, motivation technique, combined method<sup>19</sup>, telephone counseling and telephone alert<sup>12,14,16</sup>. However, the sustainable smoking cessation results were less than 60% because of high dropouts<sup>17,19-20</sup>.

There were 8 factors that were associated with the most selected smoking cessation method: smoking cessation medication with statistical significance at 0.05 and 0.01. They were age, occupation, income, education level, marital status, history of closed person smoked, history of smoking cessation effort and nicotine addiction level. Most of the samples were young with age 20-29 years, finished

secondary or vocational schools, work as company employee with income of 10000-15000 Baht per month and they had high and very high nicotine addiction levels. They believed the drug therapy prescribed by doctors would be quicker than other smoking cessation methods and with less cost. The high and very high nicotine addicted smokers knew that if they did not smoke for 1 day or during the first cessation week, they would suffer from withdrawal symptoms such as unhappiness, being moody, anxiety and irritable. Drug therapy prescribed by doctors could alleviate symptoms quicker than other smoking cessation methods. This indicated that recommendation for smoking cessation medication had to consider age, occupation, income, education level, marital status, history of closed person smoked, history of smoking cessation effort and nicotine addiction level. However, the association between drug therapy prescribed by doctors and history of alcohol drinking and duration of smoking were not statistical significant.

## Conclusion

The most selected smoking cessation method by the smokers in Bangkok was smoking cessation medication, NRT in the form of nicotine chewing gum and sodium citrate mouthwash. There were 8 factors which were associated with smoking cessation medication with statistical significance. They were age, occupation, income, education level, marital status, history of closed person smoked, history of smoking cessation effort and nicotine addiction level.

## Recommendation

The health team should recommend smokers who wanted to quit smoking with the three most selected smoking cessation methods. They were smoking cessation medication, NRT in the form of nicotine chewing gum and sodium citrate mouthwash. The recommendation should consider age, occupation, income, education level, marital status, history of closed person smoked, history of smoking cessation effort and nicotine addiction level.

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