

# TOBACCO SMOKING BEHAVIORS OF BACCALAUREATE STUDENTS, THAILAND

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## Abstract

The smoking behaviors of youths and young adults have changed worldwide. This study aims to explore the tobacco smoking behaviors of a university students which includes the type, duration, amount, frequency, reason, addiction level, and family history of smoking. Descriptive cross-sectional study was used with the university students in Thailand. Proportional Random Sampling technique was used to recruit 440 participants from 10 faculties. Results revealed that 33% of participants were currently tobacco smokers. The types of tobacco smoking use among university students that were included in the study consisted of tobacco cigarettes (11.1%), electronic cigarettes (1.4%), water-pipes (0.9%), more than one type of tobacco smoking (20.7%), second hand smoking (61.8%), and never smoked and only exposed to second hand smoking (4.1%). The common duration of tobacco smoking among university students was less than 6 months. They usually smoke less than 3 rolls of cigarette per day. The main reason for smoking were to promote relaxation, to socialize with friends, and preference for tobacco products' smell and taste. The key inducement in all types of tobacco smoking among this group was friends. Most traditional tobacco cigarette smokers reported that they were addicted to smoking but other participants who smoked other kinds of tobacco smoking rejected tobacco addiction. Moreover, most of the participants have no other tobacco smokers in their family. Strengthening campus tobacco free policies and effective smoking cessation programs for university students are crucial.

Keywords: Smoking behavior, electronic smoking, water-pipe smoking, university student

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## INTRODUCTION

In recent years, the smoking behaviors of youth and young adults have changed worldwide. The prevalence of tobacco smoking in many countries have reduced gradually (Feigl, Salomon, Danaei, Ding, & Calvo, 2015; Fillion, et al., 2012). Previous studies revealed that the proportion of adult smokers in the USA has decreased from 20.9% in 2005 to 15.1% in 2015 (US Department of Health and Human Services, 2016). In addition, the prevalence of tobacco cigarette smoking among middle school students in the USA has reduced dramatically from 4.3% in 2011 to 2.2% in 2016 and the prevalence of tobacco cigarette smoking in high school students have also dropped significantly from 15.8% in 2011 to 8.0% in 2016, respectively (Centers for Disease Control and Prevention (CDC), 2017). In other countries, the current percentage of tobacco smokers in adults aged more than 18 years old in England has similarly dropped from 19.9% in 2010 to 15.5% in 2016 (National Health Service (NHS), 2017). This is similar to smoking situation in Thailand, the number of tobacco smokers among Thai people has significantly decreased from 32.0% to 21.2% over 16 years (1991 - 2007) (World Health Organization (WHO) Thailand, 2017). The factors influencing the reduction in tobacco use among young people are comprised of increased tobacco product price caused by the government raising the tax on tobacco products and strengthening and enforcement of tobacco control laws such as a smoking prohibition in indoor work areas and public places, raising the tobacco buyer minimum age, and a tobacco advertising ban, etc. (CDC, 2017; The tobacco atlas, 2017).

Despite the worldwide reduction in the prevalence of tobacco cigarette smoking among youth and young adults, surprisingly, the popularity of alternative kinds of tobacco smoking including Electronic Nicotine Delivery System (ENDS) or electronic cigarette (E-cigarette) smoking, water-pipe smoking, Roll-Your-Own (ROY) cigarette and cigar smoking have rapidly increased instead. Alongside tobacco cigarette smoking, the prevalence of electronic cigarette smoking among youth and young adults in some countries has increased. In 2011, 0.6% of middle school students in USA reported electronic cigarette use in the past 30 days and the use increased to be 4.3%, or 7.16 times higher, in 2016. Meanwhile, the prevalence of E-cigarette use among high school students also increased from 1.5% in 2011 to 11.3% in 2016 or 7.53-fold increase (CDC, 2017). The prevalence of E-cigarette use among young people in England has increased from 2% in 2015 to 6% in 2016 or triple the use within only 1 year (The tobacco atlas, 2017). The main reasons for E-cigarette use among smokers are to as an aid for tobacco cigarette smoking cessation (46.0%) and because of the perception that E-cigarettes are less harmful to their health than traditional smoking (NHS, 2017). Moreover, some experts project that in the near future electronic cigarettes will continuously grow in the market and actually replace traditional cigarette smoking (Miller, 2013).

In addition, the prevalence of water-pipe smoking (hookahs, shisha) use among youth and young adults has also increased continuously (Sidani, Shensa, Shiffman, Switzer, & Primack, 2015). The use of water-pipe smoking in the USA has doubled from 1% in 2011 to be 2% in 2016 among middle school students, and increased from 4.1% in

2011 to 4.8% in 2016 among high school students (CDC, 2017).

Moreover, there are other kinds of tobacco use among youths and young adults emerging over the past few decades. The existing studies revealed that 28.4% of UK smokers, 24.2% of Australian smokers, 17.1% of Canadian smokers, and 6.7% of US smokers, respectively, use roll-your-own cigarettes (Young, et al., 2006). The roll-your-own cigarette is more likely to be used among low income smokers (Leatherdale, Kaiserman, & Ahmed, 2009) due to financial limitations (Young, et al., 2006). Furthermore, there was a report which stated that 8% of college students in the Philippines have used cigars (Guevarra, Cordova Jr, Mercado, & Asaad, 2014).

Given the tobacco smoking trends mentioned earlier, it is important to find out if the same trends are taking place among young people in Thailand. Unfortunately, there are limited studies of current tobacco cigarette smoking behaviors among youth and young adults in Thailand. Thus, the researcher decided to explore the tobacco cigarette smoking behaviors of the university students in Thailand to provide some preliminary information of the tobacco smoking situation for planning the further proper smoking prevention and/or smoking cessation campaigns for this particular group of youth and young adults.

## **RESEARCH OBJECTIVE**

This study aims to explore the tobacco smoking behaviors of the university students which included the type, duration, amount, frequency, reason, addiction and family history of smoking.

## **RESEARCH METHODOLOGY**

### **RESEARCH DESIGN**

A descriptive cross-sectional study was conducted among Assumption University students who were studying for their bachelor's degree in the second semester of the academic year 2015. Assumption University is a private international university located in Thailand.

### **Population and Sample Sampling**

The Proportional Random Sampling technique was used to recruit the research participants from all 14,081 students across 10 different faculties. A total of 440 participant students were used as a sample. The sample size was calculated by using Yamane Taro's Formula and students were recruited by a simple random sampling technique. The number of research participants from each faculty are detailed in table 1.

### **RESEARCH INSTRUMENT**

The research questionnaire consisted of three parts and was developed by the researcher. The first part was demographic data including gender, age, nationality, faculty, and monthly income. The second part was a tobacco smoking behavior assessment which consisted of 41 items. Five types of smoking experiences were asked about including traditional cigarette smoking, E-cigarette smoking, water-pipe smoking (Baraku/Shisha/Hookah), roll-your-own cigarette smoking, and cigar smoking for duration, amount, frequency, reason, addiction level and family history of smoking. The third part consisted of the 3 items

**Table 1: The number of research participants randomly selected from each faculty**

No.	Faculty	Population	Sample
1	Faculty of Management and Economics	6,625	207
2	Faculty of Arts	3,324	103
3	Faculty of Communication Art	1,761	55
4	Faculty of Architecture and Design	738	23
5	Faculty of Law	565	18
6	Faculty of Engineering	444	14
7	Faculty of Science and Technology	256	8
8	Faculty of Nursing Science	184	6
9	Faculty of Biotechnology	113	4
10	Faculty of Music	71	2
Total		14,081	440

purposing to assess non-smokers and the second hand smoke exposure of the participants.

#### **Validity of Research Questionnaire and Reliability Testing**

The research questionnaire was reviewed for content validity by three nursing instructors of the Bernadette de Lourdes School of Nursing Science (BLNS), Assumption University who are all experts on tobacco smoking research. After the review of the questionnaire by the experts, the researcher revised the content of the questionnaire based on the experts' comments. The questionnaire was then distributed to 20 students who were studying for a baccalaureate degree in various faculties in the academic year 2015 whose characteristics were similar to the research population. All returned questionnaires were tested for reliability by using Cronbach's alpha coefficient and the results of this analysis was 0.765, indicating that it was reliable.

#### **DATA COLLECTION**

The research proposal was approved by the Institutional Review Board (IRB) of Assumption University. The questionnaires were distributed by trained research assistants who were 3<sup>rd</sup> year nursing students, BLNS, Assumption University. The data collection was done during the month of March 2016 when the students were studying in the second semester of academic year 2015. After the completion of the data collection process, the researcher analyzed the data by using descriptive statistics via a computer software program.

#### ***Ethical consideration***

The researcher was concerned about the ethical issues involved in conducting the research with University students. All participants were given a cover letter explaining of the objective of the study, the

right to participate and/or withdraw from the study at any time, and the data security methods. Participation in the study was voluntary and anonymous. The participants were given a self-administered questionnaire after obtaining a consent form. In addition, all data were kept confidential and were only able to be accessed by the researcher. The data will be kept for 5 years after the study has been completed and then destroyed.

## RESEARCH RESULTS

This study aims to explore tobacco smoking behaviors of university students. The type, duration, amount, frequency, reason,

addiction level, and family history of traditional cigarette smoking, E-cigarette smoking, water-pipe smoking (Baraku/Shisha/Hookah), roll-your-own cigarette smoking, and cigar smoking were surveyed. The research results were as follows:

### Demographic Data

Over half of participants were male (52.0%). The average age of the participants was 20.61 years old (max = 32, min = 17). Almost of the participants were of Thai nationality (92.0%). Nearly half of the participants received a monthly income of 5,000 – 10,000 baht (43.4%). (Table 2)

**Table 2: Demographic data**

<b>Demographic data</b>	<b>Frequency</b>	<b>Percent</b>
<b>Gender</b>		
- Male	229	52
- Female	211	48
<b>Age</b>		
- 17-19	95	21.6
- 20-24	336	76.4
- 25-32	9	2.0
<b>Nationality</b>		
- Thai	405	92.0
- Non-Thai	35	8.0
<b>Monthly income</b>		
- < 5,000	45	10.2
- 5,000 - 10,000	191	43.4
- 15,000 – 20,000	166	37.7
- > 20,000	38	8.6
<b>Faculty</b>		
- School of Management and Economics	207	47.0
- School of Arts	103	23.4
- School of Communication Arts	55	12.5
- School of Architecture and design	23	5.2
- School of Laws	18	4.1
- School of Engineering	14	3.2
- School of Science and Technology	8	1.8
- School of Nursing Science	6	1.4
- School of Biotechnology	4	0.9
- School of Music	2	0.5
<b>Total</b>	<b>440</b>	<b>100</b>

## 2. STUDENTS' SMOKING BEHAVIORS FOR ALL KINDS OF TOBACCO

Approximately one third of all participants (33%) were currently tobacco smokers, and another two third of them (67%) were non-smokers. The types of tobacco smoking among university students included purely tobacco cigarette smokers (11.1%), electronic cigarette smokers (1.4%), water-pipe smokers (0.9%), and 20.7% of them had smoked more than one type of tobacco. In addition, 61.8% were non-smokers who had only been exposed to second hand smoking. (Table 3)

Five types of tobacco smoking behaviors were asked about including tobacco cigarette smoking or traditional cigarette smoking, water-pipe smoking (Baraku/Shisha/Hookha), E-cigarette smoking, cigar smoking, and roll-

your-own cigarette smoking. The details of each type of tobacco smoking were as follows:

### 2.1 Tobacco Cigarette Smoking or Traditional Cigarette Smoking

There were 130 current tobacco cigarette smokers. Most of them have been smoking tobacco cigarettes for 1 – 3 years (40.0%). Approximately one third of tobacco cigarette smokers use less than 3 cigarettes (38.5%) and 3 – 9 cigarettes per day (37.7%) respectively. Nearly one fourth of the university students who are currently tobacco cigarette smokers reported that they smoke more than 5 hours per time (23.9%). The main reason of tobacco cigarette use among this group was to promote relaxation (51.6%) and their inducement to smoke was their friends (77.7%). More than half of tobacco cigarette smokers (51.5%) perceived that they were

**Table 3: The overall tobacco smoking behaviors of the University students**

Tobacco cigarette smoking behaviors	Frequency	Percent
<b>Tobacco smoking experiences</b>		
- Smoker	145	33.0
- Non-smoker	295	67.0
<b>Type of tobacco smoking</b>		
- Never use any kind of tobacco smoking	18	4.1
- Pure tobacco cigarette smoking	49	11.1
- Water-pipe smoking (Baraku/Shisha/Hookha)	4	0.9
- Electronic cigarette smoking	6	1.4
- Use more than one type of tobacco smoking	91	20.7
- Second hand smokers	272	61.8
<b>Total</b>	<b>440</b>	<b>100</b>

addicted to tobacco cigarette smoking and members who smoke tobacco cigarettes. most of participants (66.1%) have no family (Table 4)

**Table 4: The tobacco cigarette smoking behavior of the University students**

<b>Tobacco cigarette smoking behavior</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Duration of tobacco cigarette use</b>		
- Less than 6 months	13	10.0
- More than 6 months but less than 1 year	25	19.2
- 1 - 3 years	52	40.0
- 4 – 6 years	28	21.6
- 7 – 9 years	10	7.7
- More than 10 years	2	1.5
<b>Amount of tobacco cigarette smoking per day</b>		
- Less than 3 cigarettes	50	38.5
- 3 – 9 cigarettes	49	37.7
- 10 – 15 cigarettes	12	9.2
- 16 – 20 cigarettes	17	13.1
- More than 30 cigarettes	2	1.5
<b>Frequency of tobacco cigarette smoking</b>		
- Every 1 hour	23	17.7
- Every 2 hours	25	19.2
- Every 3 hours	19	14.6
- Every 4 hours	25	19.2
- Every 5 hours	7	5.4
- More than 5 hours between uses	31	23.9
<b>Reason of tobacco cigarette use</b>		
- To promote relaxation	67	51.6
- To increase concentration	6	4.6
- To reduce stress	9	6.9
- To decrease appetite	2	1.5
- To socialize with friends	12	9.2
- Have more than one reason	30	23.1
- Others (Toilet habit, self-pleasure)	4	3.1
<b>Tobacco cigarette smoking inducement</b>		
- Friend	101	77.7
- Family member	5	3.8
- Media (advertisement, movie)	11	8.5
- More than one	10	7.7
- None	3	2.3
<b>Tobacco cigarette addiction</b>		
- Yes	67	51.5
- No	63	48.5
<b>Family history of tobacco cigarette use</b>		
- Yes	44	33.9
- No	86	66.1
<b>Total</b>	<b>130</b>	<b>100</b>



## 2.2 Electronic Cigarette (E-cigarette) Smoking

There were 63 out of 440 participants who were currently E-cigarette smokers. More than half of them had been using E-cigarette for less than 6 months (52.4%). Approximately one fifth of the participants reported that they use E-cigarette every 4 hours (22.2%), every 2 hours (20.6%) and go more than 5 hours between cigarettes (20.6%), respectively. The

main reasons for E-cigarette use were preference for its smell and taste (31.7%) and for E-cigarettes the main smoking inducement was their friends (69.8%). 76.2% of those who use E-cigarettes thought that they were not addicted to this kind of smoking and 85.7% of them reported no family history of E-cigarette use (85.7%). More than half of E-cigarette smokers reported that the frequency of nicotine use with E-cigarettes (per day) was 2 -3 times (50.8%). (Table 5)

**Table 5 Electronic cigarette (E-cigarette) smoking behaviors of the University students**

<b>E-cigarette smoking behaviors</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Duration of E-cigarette use</b>		
- Less than 6 months	33	52.4
- More than 6 months but less than 1 year	15	23.8
- 1 - 3 years	15	23.8
<b>Frequency of E-cigarette smoking</b>		
- Every 1 hour	11	17.5
- Every 2 hours	13	20.6
- Every 3 hours	8	12.7
- Every 4 hours	14	22.2
- Every 5 hours	4	6.4
- More than 5 hours between uses	13	20.6
<b>Reason of E-cigarette use</b>		
- To quit smoking	10	15.9
- Smell/taste preference	20	31.7
- Harmless to health	5	7.9
- To socialize/trend with friends	3	4.8
- Have more than one reason	25	39.7
<b>E-cigarettesmoking inducement</b>		
- Friend	44	69.8
- Family member	1	1.6
- Shop	2	3.2
- Media (advertisement, movie)	7	11.1
- Internet	6	9.5
- More than one	3	4.8
<b>E-cigarette addiction</b>		
- Yes	15	23.8
- No	48	76.2
<b>Family history of E-cigarette use</b>		
- Yes	9	14.3
- No	54	85.7
<b>Frequency of nicotine use with E-cigarette (per day)</b>		
- 1 time	15	23.8
- 2 – 3 times	32	50.8
- 4 – 5 times	6	9.5
- 8 – 9 times	2	3.2
- More than 10 times	8	12.7
<b>Total</b>	<b>63</b>	<b>100</b>



### 2.3 Water-pipe Smoking (Baraku/Shisha/Hookha)

There were 65 participants experiencing water-pipe (Baraku/Shisha/Hookha) smoking. Approximately one fourth of water-pipe smokers reported that they have been using water-pipes for less than 6 months (27.7%), 1 – 3 years (24.6%), 4 – 6 years (26.2%), respectively. Most of the water-pipe smokers reported that they used water-pipe smoking only on specific occasions (67.7%). The

participants indicated the main reasons for water-pipe smoking use were related to the preference for its smell and taste (26.2%) and to socialize with friends (20.0%). Almost of those who were currently water-pipe smokers indicated that their main water-pipe smoking inducement was friends (84.6%) and almost all water-pipe smokers perceived that they were not addicted to water-pipe smoking (83.1%). Moreover, there was no family history of water-pipe smoking use (90.8%). (Table 6)

**Table 6: Water-pipe smoking (Baraku/Shisha/Hookha) behaviors of the University students**

Water-pipe smoking behaviors	Frequency	Percentage
<b>Duration of water-pipe smoking use</b>		
- Less than 6 months	18	27.7
- More than 6 months but less than 1 year	12	18.4
- 1 - 3 years	16	24.6
- 4 – 6 years	17	26.2
- 7 – 9 years	2	3.1
<b>Frequency of water-pipe smoking use</b>		
- Every day	2	3.1
- Every other day	6	9.2
- Once a week	13	20.0
- Only in specific occasion	44	67.7
<b>Reason of water-pipe smoking use</b>		
- Relaxation	10	15.4
- Smell/taste preference	17	26.2
- To socialize with friends	13	20.0
- Trendy	3	4.6
- Have more than one reason	22	33.8
<b>Water-pipe smoking inducement</b>		
- Friend	55	84.6
- Family member	1	1.5
- Shop	2	3.1
- Bar	1	1.5
- Internet	2	3.1
- More than one	4	6.2
<b>water-pipe smoking addiction</b>		
- Yes	10	15.4
- No	54	83.1
- Missing	1	1.5
<b>Family history of water-pipe smoking use</b>		
- Yes	5	7.7
- No	59	90.8
- Missing	1	1.5
<b>Total</b>	<b>65</b>	<b>100</b>

## 2.4 Cigar Smoking

There were only 6 students out of 440 experiencing cigar smoking. Half of all participants have smoked cigars for 1 – 3 years (50%). Most of them reported that they smoke less than 3 cigars (83.3%) per day and use cigars every 5 hours (83.3%). The

main reason for cigar smoking was to socialize with friends (50%). The major cigar smoking inducement of the participants was friends (33.3%). Most of the participants thought that they were not addicted to cigar smoking (83.3%) and have no any family members who smoke cigars (83.3%). (Table 7)

**Table 7: Cigar smoking behaviors of the University students**

Cigar smoking behaviors	Frequency	Percentage
<b>Duration of cigar smoking</b>		
- Less than 6 months	1	16.7
- 1 - 3 years	3	50.0
- 4 – 6 years	2	33.3
<b>Amount of cigar smoking per day</b>		
- Less than 3 cigars	5	83.3
- 16 – 20 cigars	1	16.7
<b>Frequency of cigar smoking</b>		
- Every 4 hours	1	16.7
- More than every 5 hours	5	83.3
<b>Reason of cigar smoking</b>		
- Relaxation	2	33.3
- Decreased appetite	1	16.7
- To socialize with friends	3	50.0
<b>Cigar smoking inducement</b>		
- Friend	2	33.3
- Family member	1	16.7
- Shop	1	16.7
- Movie	1	16.7
- Want to try	1	16.7
<b>Cigar smoking addiction</b>		
- Yes	1	16.7
- No	5	83.3
<b>Family history of cigar smoking</b>		
- Yes	1	16.7
- No	5	83.3
<b>Total</b>	<b>6</b>	<b>100</b>

## 2.5 Roll-your-own (RYO) Cigarette Smoking

There were 4 students out of 440 experiencing RYO cigarette smoking. The most common duration of RYO cigarette smoking was less than 6 months (50%). The amount of RYO cigarette smoking per day among the participants was less than 3 cigarettes (75%). Half of the participants

smoke a RYO cigarette (per day) every 5 hours (50%). The main reason of RYO cigarette smoking was to promote relaxation (50%). All of them (100%) indicated that the RYO cigarette smoking was induced by their friends. Half of them (50%) thought that they were addicted to RYO cigarette smoking and had no family history of RYO cigarette smoking use (50%).(Table 8)

**Table 8: Roll-your-own cigarette smoking behaviors**

Roll-your-own cigarette smoking behaviors	Frequency	Percentage
<b>Duration of RYO cigarette smoking</b>		
- Less than 6 months	2	50.0
- 1 - 3 years	1	25.0
- 4 – 6 years	1	25.0
<b>Amount of RYO cigarette smoking per day</b>		
- Less than 3 rolls	3	75.0
- 3 - 9 rolls	1	25.0
<b>Frequency of RYO cigarette smoking</b>		
- Every hour	1	25.0
- Every 4 hours	1	25.0
- More than every 5 hours	2	50.0
<b>Reason of RYO cigarette smoking</b>		
- Relaxation	3	75.0
- Concentration/Decreased appetite	1	25.0
<b>RYO cigarette smoking inducement</b>		
- Friend	4	100.0
<b>RYO cigarette smoking addiction</b>		
- Yes	2	50.0
- No	2	50.0
<b>Family history of RYO cigarette smoking</b>		
- Yes	2	50.0
- No	2	50.0
<b>Total</b>	<b>4</b>	<b>100</b>

Moreover, more than half of the participants (61.8%) reported that they had not been a tobacco cigarette smoker but they had been exposed to second hand smoke. The details of the second hand smoke exposure were as the following:

## 2.6 Second hand Smoke Exposure

There were 296 students out of 440 who experienced second hand smoking. Nearly one fourth of all participants had been exposed to second hand smoke for less than 6 months

(23%). The frequency of second hand smoke exposure (per day) were mostly 2 – 3 times (41.5%).

The major source of second hand smoke was their close friends (34.5%) and classmates (20.3%). Most of the participants reported that the main type of second hand smoke they were exposed to was from tobacco cigarette smoking (72.5%). Interestingly, most of the participants reported that the place where the second hand exposure took place was at the University (54.7%). (Table 9)

**Table 9: Second hand smoke exposure of the University students**

<b>Second hand smoke exposure</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Duration of second hand smoke exposure</b>		
- Less than 6 months	68	23.0
- More than 6 months but less than 1 year	45	15.2
- 1 - 3 years	59	19.9
- 4 – 6 years	55	18.6
- 7 – 9 years	13	4.4
- More than 10 years	56	18.9
<b>Frequency of second hand smoke exposure (per day)</b>		
- 1 time	114	38.5
- 2 – 3 times	123	41.5
- 4 – 5 times	30	10.1
- 6 – 7 times	12	4.1
- 8 – 9 times	5	1.7
- More than 10 times	12	4.1
<b>Tobacco smoker</b>		
- Parents	37	12.5
- Close friends	102	34.5
- Boyfriend/Girlfriend	20	6.8
- Classmate	60	20.3
- Relatives	13	4.4
- Teacher	21	7.1
- Stranger	1	0.3
- More than one person	42	14.1
<b>Type of smoke</b>		
- Tobacco cigarette smoking	215	72.6
- Electronic smoking	22	7.4
- Water-pipe smoking (Baraku/Shisha/Hookha)	9	3.1
- Cigars	1	0.3
- More than one source	49	16.6
<b>Place of second hand smoke exposure</b>		
- University	162	54.7
- Bus stop	15	5.1
- Night club	22	7.4
- Home	25	8.5
- Dormitory	3	1.0
- More than one place	69	23.3
<b>Total</b>	<b>296</b>	<b>100</b>

## 2.8 Reason For Not Smoking In Non-tobacco Cigarette Smokers

There were 66.4% of the university students reporting that they were non-smokers (292 out of 440). The reason for not smoking was health concerns (45.2%), the bad smell of tobacco (21.2%), image disturbance (6.2%), economic concerns (1.0%), and more than one reason (26.4%), respectively. (Table 10)

## DISCUSSION

Most of the participants were male students (52%) aged between 20 and 24 years old (76.4%) and 17 and 19 years old (21.6%) which are defined by the United Nations (UN) as part of youth group category (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2017).

### Students' smoking behaviors

Approximately one third of all participants (33.0%) reported current tobacco smoking use and 67% of them reported themselves as non-smokers but most of them still had experienced second hand smoking. Among all

tobacco cigarette smokers, most of them used more than one type of tobacco smoking (20.7%) and 11.1% used only tobacco cigarette smoking. The research finding is consistent with the latest data from the WHO report on the global tobacco epidemic 2017, which indicated that a total of 15.0% of Thai youths had currently used some forms of tobacco for smoking, and 11.3% of them were currently cigarette smokers (WHO, 2017).

The tobacco smoking behaviors in each type of tobacco among the university students was revealed as the following:

### - Traditional cigarette smoking

Over one tenth of all participants (11.1%) were currently only tobacco cigarette smokers and 130 students out of 440 (29.5%) reported that they had never smoked tobacco cigarettes. The longest duration of tobacco cigarette use is more than 10 years (1.5%) and the shortage duration is less than 6 months (10%). Most participants had used traditional cigarettes for 1 – 3 years (40%), followed by 4 -6 years (21.6%), and more than 6 months but less than 1 year (19.2%), respectively. Approximately one third of the students smoke less than 3 cigarettes per day (38.5%) and smoked every 2 hours (19.2%) and every 4 hours (19.2%).

**Table 10: Reason of not to smoke of non-tobacco cigarette smokers**

Reason of not to smoke of non-tobacco cigarette smokers	Frequency	Percentage
<b>Reason of not to smoke</b>		
- Bad smell	62	21.2
- Disturbed image	18	6.2
- Health concern	132	45.2
- Economic concern	3	1.0
- More than one reason	77	26.4
<b>Total</b>	<b>292</b>	<b>100</b>

Even though the prevalence of cigarette smoking has gradually reducing worldwide. At the same time, the WHO reported that in the year 2016 the prevalence of current tobacco cigarette smoking among Thai youth was 11.3% which consisted of 17.2% of the male population who were smokers and 5.2% of the female population who were smokers (WHO, 2017) which has constantly reduced from 32.0% in the year 1991 and 21.2% in the year 2007, respectively (WHO, 2017). This research findings is also consistent with the study of Rahman, Ahmad, Karim, & Chia (2011) who conducted research about smoking behavior among secondary school students in Bangladesh and found that male students were 2.282 times more likely to smoke cigarettes than female students. In addition, the strongest determinants of smoking among this group were school teachers' smoking behaviors and peer influence. Moreover, the findings also related to the report of England's statistics on smoking which found that 15.5% of adults were smokers in the year 2016 which had reduced from 19.9% in 2010 (NHS, 2017). The reduction in the prevalence of tobacco cigarette smoking was affected by the enforcement of tobacco control laws and related regulations, the perception of tobacco cigarette smoking related to health and illness, and increased tobacco cigarette product price (CDC, 2017; The tobacco atlas, 2017). However, Burkhardt (2015) mentioned that the rate of decline of tobacco cigarette use has slowed in recent years and suggested some urgent actions that may need to be taken to prevent smoking related illnesses and mortality in the near future.

Based on this research finding, the main reasons that more than half of participants use tobacco cigarettes was to promote relaxation

(51.6%) and most of them learned to smoke tobacco cigarettes from their friends (77.7%) without a family history of tobacco cigarette use (66.1%) and more than half of them thought that they were addicted to tobacco cigarette (51.5%). The research findings differ from the report of England statistics which found that the most common reason of cigarette smoking among youths was to look cool among their friends (NHS, 2017). On another hand, there were supportive evidence to this research that the cigarette smoking behavior was statistically significant to the psychological distress (Mee, 2014; US Department of Health and Human Services, 2016) which is consistent with the smokers giving the main reason to use tobacco cigarette smoking for relaxation.

#### **- Electronic cigarette smoking (E-cigarette smoking)**

The results shown that 14.3% of all participants were smoking only E-cigarettes but surprisingly nearly half (43.44%) of all tobacco smokers reported of E-cigarette smoking experiences. The E-cigarettes are popular among young adults (CDC, 2017; the tobacco atlas, 2017). The results from this study revealed that more than half of the participants reported that they learned about E-cigarettes from their friends (69.8%) and had no any family member who used E-cigarettes (85.7%). Since E-cigarette use is widespread globally, it becomes a public health concern because the number of E-cigarette users all over the world have swiftly increased. E-cigarettes are a gateway product for smoking that adolescents usually try first before others kind of tobacco products (Patrounova, 2014). Some researchers have called it the renormalization of smoking and argue that it will cause the continued

perpetuation of the smoking epidemic (Voigt, 2015).

The reasons for E-cigarette use among participants included the preference to its smell/taste, as a method to quit smoking, the perception of harmlessness to health, and to socialize/follow a trend with friends. The results of this study were congruent with a previous study done by Miller (2013) which found that young people in the USA have increasingly used E-cigarette smoking in an attempt to quit traditional cigarette smoking. but the findings contrast with the study of Park, Seo & Lin (2016) which found that the use of E-cigarettes was not statistically associated with the intention to quit smoking. In addition, the study of Patrounova (2014) found that adolescents and young adults have been attracted by the new and intriguing flavors and smell of E-cigarettes which can be added into the cartridge while using E-cigarettes. Moreover, based on a study by Pearson, Richardson, Niaura, Vallone, & Abrams (2012), young adults and those who have an educational level of at least a high school diploma perceived that E-cigarette smoking was less harmful to their health than traditional cigarette smoking whereas the safety of E-cigarette smoking is, at best, uncertain (Miller, 2013) and still ambiguous among researchers and academics and will require more studies to prove long-term systemic and local effects of E-cigarette (Patrounova, 2014).

The frequency of E-cigarette use depended on the need and smoking habits of the smokers. Most of the E-cigarette smokers (50.8%) used E-cigarette with liquid nicotine 1 – 2 times per day despite most of them (76.2%) believing that they were not addicted to E-cigarettes. Some traditional cigarette smokers may have the intention to reduce their

nicotine intake by reducing the amount of liquid nicotine they use for E-cigarette smoking but they still retain the smoking habit and experience less craving for cigarette smoking (Patrounova, 2014). This was related to the study of smoking cessation attempts among E-cigarette users with a 1 year follow up by Brose, Hitchman, Brown, West, & McNeill, 2015 which found that E-cigarette use was only associated with smoking reduction attempts in the group of daily E-cigarette users but not related with non-daily E-cigarette users and not related to smoking cessation in those who fall into both groups.

#### **- Water-pipe smoking (Baraku/Shisha/Hookha)**

The results of this study revealed that 14.8% of the University students (65 students out of 440) experienced water-pipe (Baraku/Shisha/Hookha) smoking which was quite similar to the prevalence of E-cigarette smoking. There was confirmation that water-pipes have been popular among youths and young adults in many countries especially among new smokers or non-daily cigarette smokers as well as among female smokers. Water-pipe smoking has been increasing among adults in the USA in the 3 years (between 2005 -2008) with more than 40% of adults at least trying a water-pipe (Smith, et al., 2011). Based on this research, approximately one fourth of all participants who reported water-pipe smoking use have used water-pipe smoking for less than 6 months (27.7%), 1 – 3 years (24.6%), and 4 – 6 years (26.2%), respectively. Most of the water-pipe smokers reported that they hadn't used a water-pipe daily but usually use it only on a specific occasion (67.7%) and most of them learned about water-pipe smoking from



their friends (84.6%). Moreover, most of participants thought that they weren't addicted to this kind of smoking and almost all of them didn't have a family history of water-pipe smoking use (90.8%).

The results of this study was congruent with the research of Kruger, Walbeek, & Vellios (2016) which examined the smoking behavior among university students in South Africa and found that 63.0% of the university students had used water-pipe smoking and 9.9% of them had used water-pipe smoking in the past 30 days and, moreover, the study also found that water-pipe smoking was related to socialization and positively associated with alcohol consumption. Similarly to the study of Manderski, Hrywna, & Delnevo (2012) which conducted research about hookah (water-pipe) use among New Jersey youths and found that 11.4% of all participants had used a hookah and they had generally used it only on special occasions.

The reasons for water-pipe smoking use among the research participants in this study include, one third of all participants reported that they used water-pipes for more than one reason (33.8%) which may be a combination by the following reasons, smell/taste preference (26.2%), to socialize with their friends (20.0%), relaxation (15.4%) and because it is trendy (4.6%), respectively. Water-pipe smoking has one specific characteristic that attracted youths, new smokers, non-daily smokers, and especially women who were concerned about the harmful health impacts of traditional cigarettes, this is similar to E-cigarette, which is its taste and smell which caused them to perceive that water-pipe smoking and E-cigarettes are safer for their health than more traditional cigarette smoking (Setchoduk, 2012; Setchoduk 2013; Setchoduk 2016).

#### **- Cigar smoking and Roll-your-own cigarette smoking**

Even though the prevalence of cigar smoking (1.7%) and roll-your-own (RYO) cigarette smoking (0.9%) was very low in this study, it was interesting that these types of smoking were not commonly used by youth and young adults.

In previous studies it was found that in the year 2014, 63.5% of high school students in the USA reported flavored cigar use in the past 30 days and the results also found that cigar use was related to alcohol, marijuana, and other inhalants use. Cigar use may attract smokers who were cost concerned because cigars had lower taxes than traditional cigarettes and, moreover, cigars represent luxury and a successful lifestyle (CDC, 2016).

For RYO, these research findings were congruent with the findings of a survey in England which found that the prevalence of RYO cigarettes or hand-rolled tobacco smoking had doubled between the years 2004 and 2012 (NHS, 2017). Moreover, the prevalence of RYO cigarette smoking had emerged at 28.4% in the UK, 24.2% in Australia, 17.1% in Canada, and 6.7% in the USA, respectively (Young, et al., 2006). In addition, RYO cigarette smoking was found to be less likely in young adults. It had more prevalence in smokers who were heavier smokers, severely addicted to nicotine, and had lower incomes when compared to users of manufactured cigarettes (Leatherdale, Kaiserman, & Ahmed, 2009) which was not defined in this study.

Further research is needed to specifically explore cigar and RYO cigarette smoking behaviors among youth and young adults in Thailand.

**- Second hand smokers**

More than half (67.3%) of the participants had experienced second hand smoking from tobacco cigarette smoking (72.6%) produced by their close friends (34.5%) and their classmates (20.3%) and at the University (54.7%). Even though they were not cigarette smokers, they also got the same health related harm from the smoke of tobacco as the smokers. Most second hand smokers had experienced it for less than 6 months (23%) and were exposed 2-3 times per day (41.5%) to second hand smoke. The research results were congruent with the survey of smoking statistics in the UK which found that 31.0% of men and 26.0% of women were exposed to second hand smoke and that people between the ages of 16 and 24 had the highest incidence of second hand smoke exposure and the report showed that the exposure areas included outdoor areas such as pubs/restaurants/cafes, followed by at home (NHS, 2017).

Moreover, these research results reflected the weakened University smoking policy because more than half of second hand smokers reported that they had been exposed to second hand smoke at the University. The findings were related to the results from the focus group study of 4 universities in Canada which also found that the students smoking behaviors were less likely influenced by the university tobacco free policy and which may be the result of unclear messages and inconsistency of policy content and consequences which caused the students to perceive that they could smoke on campus largely without comment or consequence (Baillie, Callaghan, & Smith, 2011).

**CONCLUSION**

The behaviors of smoking among youth and young adults have changed. The prevalence of traditional cigarette smoking is reduced but E-cigarettes, water-pipe smoking, cigar, and roll-your-own cigarettes have emerged and become more widespread. This research result is an initial finding of youths' and young adults' tobacco smoking behaviors in Thailand. Further studies to explore each type of tobacco smoking, especially trends of smoking among this particular group is crucial. Moreover, studies about the effectiveness of smoking cessation campaigns and second and third hand smoking prevention methods also are necessary. In addition, universities need to strengthen the implementation of their tobacco free policies to protect and reduce the amount of second hand smoke which is not only from traditional cigarettes but also from other kinds of tobacco use as well. Furthermore, the use of effective tobacco cessation programs for university students who are current smokers such as peer group support, individual consultation, and empowerment programs should be considered and implemented.

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