

Smoking Behavior and Smoking-Related Knowledge of Students at Silpakorn University, Thailand

Danita Phanucharas and Rapeepun Chalongsuk*

*Department of Community Pharmacy, Faculty of Pharmacy,
Silpakorn University, Nakhon Pathom, Thailand*

**Corresponding author. E-mail address: rapee@su.ac.th*

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Abstract

The aim of this study was to obtain information about smoking behavior and smoking-related knowledge of students at Silpakorn University, Sanamchan Palace Campus, located in Nakhon Pathom Province, Thailand. A cross sectional study was designed to collect data by self-administered, personal questionnaires in 137 students who smoked; information from 9 faculties was obtained from July 8th to August 4th, 2006. The questionnaire included items about daily consumption of cigarettes, income per month, age at which smoking began, previous attempts to quit smoking, smoking cessation techniques, campaigns against smoking, smoking-related knowledge and the reasons for smoking among the students sampled.

The study result was that of the 137 enrolled university students who smoked, 89.8% were men. Average daily consumption were 8.6 ± 7.3 cigarettes and average income per month was 5,537.40 Baht. Mean age of initiation of smoking was 17.1 ± 2.3 years. Nearly one third, 29.2% of smoking students had never tried to quit smoking while 13.9% stated they had tried to quit more than 3 times. The smoking cessation techniques included the cigarette buying method, no-smoke self-enforcement method and the exercise and water drinking/frequent bathing method. Some subjects used nicotine chewing gum or cessation medicine and limited party going or stayed away from other smokers. Few of them took counselings at smoking cessation clinics. Most students had seen campaigns against smoking on television, billboards, newspapers or magazines. Most students thought that cigarettes were addictive and could hurt one or cause bad health effects for smokers as well as passive smokers. Some students had never tried to quit smoking for various reasons such as smoking was not addictive, it was unnecessary to quit smoking, and smoking was a source of pleasure. The main given reasons for smoking in the samples were stress relief, gaining happiness, free time operation, habitation, and peer pressure. The reasons for smoking again after having stopped for a period were stress, relieving sadness or emotional problems, peer pressure, habitation, no strong intention or quit attempt, taste addiction and weight gain after cessation.

Students who have never tried to quit smoking should be aware of their chances to get disease/premature death from cigarettes. They also should be educated about the toxic chemicals in cigarettes which not only harm smokers but also passive smokers such as their parents, friends and families. Some misconceptions of students who never tried to quit smoking should be changed to stimulate them to begin the cessation process. Students who again smoked after having some cessation period should be provided some information on techniques to help them succeed in the future.

Key Words: Cigarette; Smoking; Smoking behavior; Smoking-related knowledge; Smoking students; Smoking cessation

Introduction

The number of smokers worldwide is now about 1.1 billion, representing 18% of the world population (Public Relations Department of Thailand, 2007). Globally, 80% of smokers live in developing countries. In Thailand, the National Statistical Office indicated that the number of regular smokers now stands at 10.6 million, representing 22.5% of the population (National Statistic Office of Thailand, 2004). Cigarette smoking is a risk factor for a broad range of diseases such as lung cancer, emphysema, looking older, throat cancer, stroke, ischemic heart disease, mouth cancer, tuberculosis, gastric ulcer, diabetes mellitus, arthritis and cataract (The ASPECT Consortium, 2004). It has been estimated that around 60,000 Thais die each year as a result of tobacco-related diseases (Supawongse, 2005). Tobacco users are at much higher risk of falling sickness and of premature dying (Doll et al., 2004). It is known that about half of all continuing regular smokers will be killed by their smoking and those that die in middle age (defined as aged 35-69 years) as a result of their smoking lose on average 22 years of life, with a larger proportion of that shortened life span being spent in health problem. Men born between 1900-1930 who smoked only cigarettes and continued smoking died on average about 10 years younger than lifelong non-smokers. The cigarette smoker versus non-smoker probabilities of dying in middle age are 42% and 24%.

Toxic chemicals that cause bad health for smokers and passive smokers include tar and nicotine (The ASPECT Consortium, 2004). Tar has several

components and contains more than 40 cancer-causing chemicals (American Academy of Family Physicians, 2007). Organs affected by these poisons include not only mouth, vocal chords, throat, and lung, but also kidney, bladder, uterus and ovaries. Nicotine is a poisonous, water-soluble alkaloid found in tobacco leaves and used as an insecticide (American Academy of Family Physicians, 2007). One cigarette contains approximately 8 milligrams of nicotine. Nicotine increases heart rate and blood pressure. Nicotine affects the body in only three-and-a-half seconds, and the effect lasts approximately 90 minutes. Nicotine is an addictive drug and there is no evidence that nicotine causes cancer. Nicotine replacement is also used as one kind of smoking cessation medicine (Siahpush et al., 2006).

It has been shown that combustion aerosols from cigarettes contain common chemical components such as carbon dioxide and carbon monoxide (Siahpush et al., 2006). Carbon monoxide is a major contributor to cardiovascular diseases from smoking. It impairs oxygen transportation in the blood. It is also strongly linked with the development of coronary heart disease. One gaseous constituent in cigarette smoke is hydrogen cyanide. Cyanide released from a cigarette can be 160 times greater than the level considered safe (Siahpush et al., 2006). It has a direct, harmful effect on the cilia, a part of the natural lung clearing mechanism in humans, thereby increasing the likelihood of developing disease. Risk from cyanide is significant with just one cigarette per day. Another gaseous constituent in cigarette smoke

is nitrogen oxide, of which the primary form is nitric oxide (NO) (Tobacco-Related Disease Research Program, 2007). Nitric oxide itself is not necessarily toxic for example, NO is produced in the body by many cell types as a physiological messenger molecule, and by inflammatory cells as part of the defense mechanism against invading organisms. However, the relatively high concentration of NO presented in tobacco smoke might render its toxicity. Certain white blood cells were activated to produce a number of compounds, including reactive nitrogen oxides that could cause specific modifications to cellular components for example, proteins and their constituent amino acids. In many recent studies, a formation of 3-nitrotyrosine has been associated with many diseases, including those associated with inflammation in lung airways.

Cessation of current smokers is needed to lower tobacco deaths (Jha, 2008). Reduced uptake of smoking by students would save their lives chiefly after 2050. Students who smoked and quit in their 30s would have death risks close to those of lifelong non-smokers (Jha, 2008). Most adults who start smoking in their teens never expect to become addicted. The National Statistic Office of Thailand (2007) found that in 2004, the average age of smoker initiation were 18.4 years, which were in the same average age of university students. These smokers might continue smoking for another 23 years and then quit smoking because of illness from smoking (Vathesatogkit, 2008). This research evaluated smoking behavior and smoking-related knowledge of students at Silpakorn University who smoked. Results from this research might be useful to raise smoking students' concern about illness and toxic substances from smoking cigarettes, and encourage them to give up smoking.

Methods

A self-administered, personal questionnaire about smoking behavior and smoking-related knowledge was completed by smoking students from 9 faculties at

Silpakorn University, Sanamchan Palace Campus, located in Nakhon Pathom Province, Thailand, from July 8th , to August 4th , 2006.

Study population

Subjects of this study were all students who smoked. The students were from 9 faculties of the Sanamchan Palace Campus, Silpakorn University. A pilot study in the second semester of 2005 found that 0.1 % of all 9,307 students had smoked cigarettes. The formula for calculating a sample size from proportions (Israel, 2007) is

$$n_0 = \frac{Z^2 pq}{e^2}$$

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where n_0 is the sample size.

Z^2 is the desired confidence level = 95%.

e is the desired level of precision = $\pm 5\%$.

p is the estimated proportion of smoking students in the population = 0.1, and q is $1-p$.

N is the population size.

n is the adjusted sample size when N is the population size.

137 smoking subjects, with 95% of confidence level and $\pm 5\%$ of precision level, were chosen from the total population on the basis of quota random sampling (Table 1). Data were collected at various college cafeterias, swimming pool and parks at Silpakorn University, Sanamchan Palace Campus. These areas were used by many smoking students around lunch and in the evening.

A preliminary study for the validity of the questionnaires was conducted on 40 smoking students from other universities; Chulalongkorn University, Thammasat University, Prince of Songkla University, Khonkaen University and Nakorn Pathom Rajabhat University.

Instrument

Between July 8th and August 4th, 2006, the data

Table 1 Subjects chosen from each faculty

Faculty	no. of smoking students* n (%)	no. of questionnaires
Faculty of Engineering and Industrial Technology	396	57(41.6)
Faculty of Arts	139	20(15.0)
Faculty of Decorative Arts	138	20(15.0)
Faculty of Science	123	18(13.1)
Faculty of Architecture	65	9(6.6)
Faculty of Education	52	8(5.8)
Faculty of Pharmacy	17	2(1.5)
Faculty of Animal Science and Agricultural Technology	11	2(1.5)
Faculty of Painting, Sculpture and Graphic Arts	6	1(0.7)
Total	947	137(100.0)

* number of smoking students calculated from pilot study

were collected in the form of self-administered questionnaires.

The following variables were studied: sex, age, faculty, cumulative grade point average (Cum.GPA), education level, income per month, age at which smoking began, number of cigarettes smoked per day, previous attempts to quit smoking, longest smoking abstinence, smoking cessation techniques, and exposure to campaigns against smoking from various media.

Students who smoked were asked for reasons for smoking and relapse after having quit for some period. The reasons that some students had never tried to quit smoking and smoking-related knowledge about the health effects and some toxic chemicals from cigarette smoking were also studied.

Statistical analysis

Information about smoking behavior, smoking-related knowledge of students and the reasons for smoking among students who smoked were recorded. Data were presented in percentages, ranges, modes, medians and means with standard deviations and analysed by SPSS/PC program (statistical package for Social Sciences) version 11.0.

Results

Characteristics of the samples

There were 137 students who completed the questionnaires. Table 2 shows the baseline characteristics of students. 123 students were men (89.8%) and 14 (10.2%) women, with an average age of 20.5 years (range: 18-25 years, mode: 21 years). Average Cum.GPA of students was 2.55 ± 0.48 (range: 1.80-4.00). Average income per month of students was 5,537.40 Baht (SD: 2,276.82, range: 2,000 - 18,000, mode: 6,000). 37.2% of students were third-year students and 27.7% were fourth-year students or higher. Mean age of initiation of smoking was 17.1 years (SD: 2.3, range: 7-21, mode: 18, median: 18) and 47.4 % of students started smoking before 18 years. More than half of the smoking students (51.8%) had started smoking after they had entered university (since 18 years of age). 76.9% of students smoked 1-10 cigarettes per day, 19.4% smoked 11-20 cigarettes per day, and the average daily consumption were 8.6 cigarettes per day (SD: 7.3, range: 1-40, mode: 10, median: 7).

29.2% of students who smoked had never tried to quit smoking. On the other hand, 70.8% of students

Table 2 General characteristics of sampled students (n=137)

Characteristics	n (%)
Gender	
male	123 (89.8)
Level of education	
First-year	17 (12.4)
Second-year	31 (22.6)
Third-year	51 (37.2)
Fourth-year and higher level	38 (27.7)
Age at which smoking began (years) (n=136)	
<15	29(21.3)
16-17	36(26.5)
>18	71(52.2)
Number of cigarettes consumed per day (n=134)	
1-10 cigarettes/day	103 (76.9)
11-20 cigarettes/day	26 (19.4)
More than 20 cigarettes/day	5 (3.7)
Previous attempt to quit smoking	
Never	40 (29.2)
Ever	97 (70.8)
1 time	14 (10.2)
2 times	21 (15.3)
3 times	10 (7.3)
More than 3 times	19 (13.9)
NA*	33(24.1)
Longest abstinence time from smoking (n=97)	
Within one week	38 (39.2)
Within one month	31 (32.0)
Within three months	17 (17.5)
Over three months	9 (9.3)
NA*	2(2.1)
Smoking cessation techniques	
Not buying cigarettes	114 (83.2)
Self enforcement	71 (51.8)
Exercise	40 (29.2)
Water drinking or taking a bath	38 (27.7)
No party accommodation or stay away from smokers	23 (16.8)
Nicotine chewing gum or cessation medicine use	34 (24.8)
Smoking cessation clinics	5 (3.6)
Others (e.g. support from lover, not light up, Buddhism cure, less smoking, lozenge use)	16 (11.7)

Table 2 General characteristics of sampled students (n=137) (continued)

Characteristics	n (%)
Exposure to Campaigns against smoking from varieties of media	
Never	8(5.8)
Television viewing	124 (90.5)
Bill board	88 (64.2)
Newspapers or magazines	68 (49.6)
Shop	53 (38.7)
Internet	48 (35.0)
Radio	40 (29.2)
Advertising before or after movie	36 (26.3)
Others (e.g. cigarette package, hospital)	13 (9.5)

NA* = No Answer

had previously tried to quit smoking and some of them, 13.9%, said they had tried to quit more than 3 times. Students had reported lengths of abstinence from smoking for as long as one week (39.2%), one month (32.0%), and three months (17.5%) (range: 1 day-3 years). Students had used various smoking cessation techniques, about 3.5 methods on average. Their techniques included not buying cigarette or carrying method (83.2%), self enforced no smoking (51.8%), exercise (29.2%) and water drinking or taking a bath (27.7%). Some of them used nicotine chewing gum or cessation medicine (24.8%) and had no party accommodation or stayed away from other smokers (16.8%). Few of them (3.6%) used counselings at smoking cessation clinics. Each student had seen an average of 4.7 campaigns against smoking. Popular media for such messages which the student received were television (90.5%), billboards (64.2%), newspapers or magazines (49.6%), shops (38.7%) and the internet (35.0%).

Smoking-related knowledge of the students

81.8% of students who smoked thought that cigarettes were addictive and 92.7% thought that cigarettes could hurt passive smokers the same as they hurt smokers. Students thought that cigarette

smoking caused lung cancer (100%), emphysema (98.5%), aging (93.4%), throat cancer (71.5%), stroke (58.4%), ischemic heart disease (58.4%), and mouth cancer (51.8%). Fewer than 50% of students knew that cigarette smoking caused tuberculosis, gastric ulcer, diabetes mellitus, arthritis and cataracts in smokers (Table 3). 89.1% of students thought that nicotine could harm smokers as well as passive smokers. And about 10 to 40% of students did not know that tar, carbon dioxide, carbon monoxide, hydrogen cyanide and nitrogen oxide could harm smokers and passive smokers (Table 4).

Reasons for smoking among the sampled students

27 students had never tried to quit smoking for many reasons such as they believed that smoking was not addictive, it is unnecessary to quit smoking, and smoking is a source of pleasure (Table 5).

The reasons for smoking of the samples were stress relief (76.7%), gaining pleasure (54.3%), free time operation or time alone (48.8%), habitation (36.4%), peer pressure (30.2%) and few with smoking addiction (13.2%) (Table 6).

The reasons for smoking again after having some period of cessation in 96 students were stress, relieving sadness or emotional problems (85.4%), peer

Table 3 Students' knowledge about some ill effects caused by cigarette smoking (n = 137)

<i>Bad health</i>	<i>Cigarette causation</i>	<i>Not from cigarette causation</i>	<i>Not known</i>
Lung cancer	137(100%)	0	0
Emphysema	135(98.5%)	2(1.5%)	0
Aging	128(93.4%)	5(3.6%)	4(2.9%)
Throat cancer	98(71.5%)	10(7.3%)	29(21.2%)
Stroke	82(59.9%)	11(8.0%)	44(32.1%)
Ischemic heart disease	80(58.4%)	17(12.4%)	40(29.2%)
Mouth cancer	71(51.8%)	18(13.1%)	48(35.1%)
Tuberculosis	59(43.1%)	33(24.1%)	45(32.8%)
Gastric ulcer	42(30.7%)	42(30.7%)	53(38.7%)
Diabetes Mellitus	33(24.1%)	46(33.6%)	58(42.3%)
Arthritis	25(18.2%)	49(35.8%)	63(46.0%)
Cataract	24(17.5%)	48(35.0%)	65(47.5%)

Table 4 Students' knowledge about some toxic chemicals from cigarette that could harm smokers and passive smokers (n = 137)

Toxic chemicals	Harm	No harm	Not known
nicotine	122(89.1%)	7(5.1%)	8(5.8%)
tar	109(79.6%)	5(3.6%)	23(16.8%)
carbon dioxide	109(79.6%)	10(7.3%)	18(13.1%)
carbon monoxide	108(78.8%)	4(2.9%)	25(18.2%)
hydrogen cyanide	85(62.0%)	3(2.2%)	49(35.8%)
nitrogen oxide	77(56.2%)	7(5.1%)	53(38.7%)

Table 5 The reasons of 27 students who had never tried to quit smoking

Reasons for never quit smoking	n=27	%
Smoking was not addicted	11	40.7
Giving up smoking was unnecessary	8	29.6
Smoking was for pleasure	3	11.1
Smoking was not a guilt	2	7.4
Smoking was not frequent	2	7.4
Giving up smoking was easy	1	3.7
Total	27	100.0

Table 6 The reasons for smoking among students who smoked

Reasons for smoking	n=129	%
Stress relieving	99	76.7
Being happy	70	54.3
Free-time Habitation or stay alone	63	48.8
Habitation such as after-meal smoking	47	36.4
Under peer pressure	39	30.2
-Friend inducement or acceptance	26	20.2
-Personality improvement or attraction	13	10.1
Addiction	17	13.2

Note: Respondents can answer more than 1 item.

pressure (77.1%), habitation (43.8%), not strong intention or quit attempt (37.5%), taste addiction (16.7%) and weight gain after cessation (3.1%) (Table 7).

Discussion

Mas et al. (2004) found that the smoking rate of Spanish medical students who were completing their sixth year of medical studies was 27% which was different from Thai students. Mean age of initiation of smoking and the average daily consumption of Spanish medical students were 17.20 years and 10.54 ± 7.89 cigarettes per day, which were similar to Thai smoking students, 17.1 years and 8.6 ± 7.3 cigarettes per day, respectively. A Royal Decree of

Spain set the minimum age for buying tobacco products at 16 years of age (The ASPECT Consortium, 2004). However, the Thailand Tobacco Products Control Act of cigarette sales banned a selling of cigarettes to persons under 18 years of age (Jha, 2008). Students were asked to show proof of age scheme when buying cigarettes. Stricter enforcement of tobacco buying laws are needed to reduce tobacco use among youth. Among students who smoked in Spain, 32.5% of medical students stated that they started smoking after they had entered university and 56.6% of them had already made at least one quit attempt (Mas et.al., 2004). From this study, 51.8% of Thai students who smoked had started smoking after they entered university and

Table 7 The reasons for smoking again after having quit for some period

Reasons for smoking again after cessation period	n=96	%
Stress, sadness or emotional problems relieving	82	85.4
Under peer pressure (e.g. friends or other people inducement or alcoholic consumption)	74	77.1
Habitation	42	43.8
No strong intention or attempt	36	37.5
Taste addiction	16	16.7
Weight gain after cessation	3	3.1
Others (e.g. little chance to get a disease, expensive cessation medicine)	7	7.3

Note: Respondents can answer more than 1 item.

70.8% had already made at least one quit attempt.

Average income per month of smoking students was 5,537 baht while average national income per capita was 6,669 baht per month (Bank of Thailand, 2007).

Students who have never tried to quit smoking should be aware of their chance to get serious health problem from cigarettes. They also should be educated on toxic chemicals in cigarettes that could harm both smokers and passive smokers such as their parents, friends and families. Misconceptions of students who have never tried to quit smoking such as smoking is not addictive, it is unnecessary to quit smoking, smoking is a source of pleasure, there is no regret in smoking, it is easy to give up smoking, limited smoking does not cause bad health and personality is improved from smoking, should be changed to stimulate students to begin the cessation process.

Students need to know how to relieve stress from university study and how to cope with daily stressors. Thailand introduced coloured graphic warnings on cigarette packages, occupying 50% of the front and the back of cigarette packs, which are useful in persuading students either not to smoke, smoke less, or stop (Supawongse, 2005). Graphic warnings on cigarette packages in Spain cover at least 30% of the main side and at least 40% of the other side of the package (The ASPECT Consortium, 2004).

Students who relapsed after a period of cessation should be provided some helpful techniques in addressing student problems such as methods for coping with stress and methods to manage peer pressure and craving. Delaying smoking techniques should also be taught to help students delay and/or eliminate the smoking of a cigarette in any given moment.

Information should be presented to students who smoke through media where students find popular including television, billboards, newspapers and magazines, shops and the internet.

Conclusion

Students who had never tried to quit smoking should be concern of their chance of developing illness and death from cigarettes. They also should be educated about the chemicals from cigarettes that could harm smokers and passive smokers such as their parents, friends and families. Some misconceptions of students who have never tried to quit smoking should also be corrected to stimulate students who had never tried to quit smoking to start cessation process.

Those students who had relapsed after some period of cessation should be provided methods that encourage them to give up smoking.

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