

Factors related to initiation of cigarette smoking behavior among secondary school student in Nakhon Pathom Province

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Abstract

Smoking is one of the most important public health concerns. In Thailand, an age of new smoker is more likely to decreasing and cigarette smoking among youth still high prevalence. This study aimed to explore a relationship between demographic factors (gender, age, and study class level), social factors (access to cigarette advertising, advertising promotion and giving cigarette sample) and initiation of cigarette smoking behaviors among students in secondary school. This cross-sectional study was carried out on 747 students in Nakhon Pathom province. The subjects recruited with a multistage sampling method from student, age 15-19 years old, in seven secondary schools in all area of the province. The data was collected by administrative questionnaire during December 2016. Data analysis was performed using SPSS-20 software, by descriptive statistic and chi-square. Results revealed that the prevalence of initiation of cigarette smoking was 19.8%, 11.8% for male and 8.0% for female. Factors significant related to initiation of cigarette smoking included gender ($\chi^2 = 17.165$, $p < 0.001$), age ($\chi^2 = 9.799$, $p = 0.007$), study class level ($\chi^2 = 7.143$, $p = 0.008$), access to cigarette advertising by community radio ($\chi^2 = 10.581$, $p = 0.014$), by community newspaper ($\chi^2 = 13.290$, $p = 0.004$), by community television ($\chi^2 = 20.547$, $p < 0.001$), cigarette advertising promotion ($\chi^2 = 35.784$, $p < 0.001$), and giving cigarette sample ($\chi^2 = 29.901$, $p < 0.001$). The results suggest that there were many factors influencing initiation of cigarette smoking among students which will be manipulated in any intervention.

Keywords: cigarette smoking, secondary school, initiation

Article history: Received 5 January 2017, Accepted 30 April 2018

1. Introduction

Smoking is one of the most important public health concerns. It can be harmful and causes adverse effects in smoker's physical health and the health of surrounding people, leading to severe diseases such as lung cancer, emphysema and cardiovascular disease. In Thailand, the number of smokers aged 15 and older was 10.77 million, or 19.97% [1]. An age of new smoker is more likely to decrease but cigarette smoking among youth still high prevalence. In 2016, the situation of tobacco control in Thailand found that current smokers were high prevalence among 19-24, and 41-59 years old [2]. When considering the cost of a smoker who is older than age 15 years, the average monthly cost of smoking was 423 baht [3]. Therefore prevention of smoking initiation and protection against the harmful effects of a cigarette smoking of that age group by selected youth age between 15-19 years old was concerned in our study.

Review literature found that determinant factors of cigarette smoking consisted of 1) latent advertising by cigarette maker like funding or support community activities, 2) cigarette promotion by breaking packed into plastic bag both with or without a cigarette brand,

3) advertising cigarette brand through media, 4) innovation cigarette type such as BARRACA Cigarette, Electric cigarette or cloud stones, and 5) advertising through online or internet [4].

The Centers for Disease Control and Prevention (US) [5] proposed that a large-scale of environmental factors influencing adolescent smoking might be either social or physical (e.g., communications in the mass media, access of youth to sales of tobacco products). Social factors such as accessibility of smoke advertising and cigarette promotion may play a key role in determining which secondary school students will have a propensity to initiate to smoke. In current Thai context, a mass media takes a role in teenage social influencing, which could be correlated to initiate smoking behaviors so that this research was trying to prove the curious.

2. Research objective(s)

The research objective was to explore a relationship between demographic factors (gender, age, and study class level), social factors (access to cigarette advertising, advertising promotion and giving cigarette sample)

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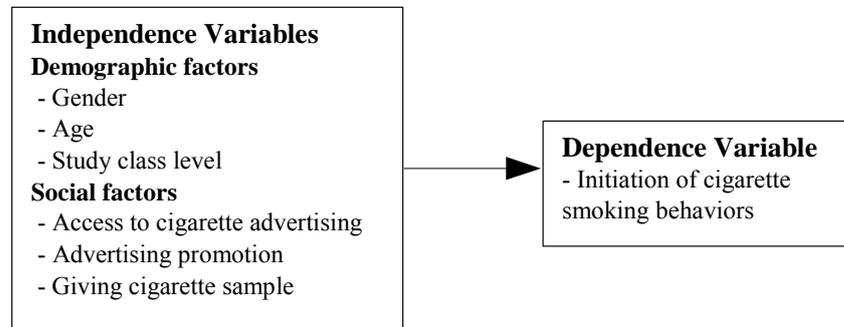


Figure 1 Research conceptual framework.

and initiation of cigarette smoking behaviors among students in secondary school.

3. Materials and methods

Design

Design of the study was cross-sectional study.

Setting

Populations were secondary school student in Nakhon Pathom Province. The number by segmental relatively were 20,168 students [6].

Sample size and calculation

This research used calculation equation from the Tobacco Control Capacity Building Center [6] as shown below

$$n = \frac{N1.96^2 r(1-r)}{(1.96^2 r(1-r)) + (N(e'r)^2)} \times deff \times \frac{1}{\text{response rate}}$$

When, $deff$ = design effect, design effect is a difference value between variance of complex design and simple random sampling = 2, n = number of sample size, r = smoking prevalence = 0.194, response rate = 0.8, e' = 0.05. Finally, number of samples resulted in 673 students.

Students in secondary school were selected by multistage random sampling method from 7 schools in Nakhon Pathom Province. The subjects were 747 students that 10% increasing from the sample size calculation because of numbers of students each class that was selected increasing this semester.

Instruments

For this study, the questionnaire was developed by collaboration between the researchers and the Tobacco Control Capacity Building Center. The questionnaire

consisted of 3 parts including; demographic questions (gender, and study class level), social factors questions (access to cigarette advertising, advertising promotion and giving cigarette sample) and initiation of cigarette smoking behaviors questions. A student was considered a “never smoker” if he/she had never smoked a cigarette, an “ever smoker” if he/she reported ever experimenting with smoking; and a “current smoker” if he/she reported smoking within the last 30 days. Validity, the research questionnaire was validated by expertists. Reliability, the Cronbach’s Alpha of the rating scale questionnaire was 0.74 and each item ranged between 0.71- 0.75. While dependence variable was an initiation of cigarette smoking behaviors of the student.

Ethical Considerations

The study approval was granted by the Ethical Review Committee for Human Research Faculty of Public Health, Mahidol University, COA.No. MUPH 2017-044. All participants were informed about the study’s purposes, confidentiality and autonomy issue, potential risk, and benefits, and they could withdraw from the study at any time without repercussion.

The research framework

The research framework was shown in figure 1. Independence variables were demographic factors including gender, age and study class level, social factors including access to cigarette advertising, advertising promotion, and giving cigarette sample.

Data collection

The research had ten nursing students assisted to collect the data. These students had trained before data collection. The data was collected by administrative questionnaire during December 2016 via a permission from administrator each school and cooperators by responsibility teachers.

Table 1 The Frequency and percentage of characteristics of the demographic and social factors of the samples (N=747)

Demographic factors	Frequency	Percentage
School		
No.1	272	36.4
No.2	192	25.7
No.3	85	11.4
No.4	63	8.4
No.5	58	7.8
No.6	53	7.1
No.7	24	3.2
Grad		
grade 7-9	184	24.6
grade 10-12	563	75.4
Gender		
Male	331	44.3
Female	416	55.7
Age	Mean =15.7, SD = 0.7 year Maximum = 19 , Minimum =15 year	

Table 2 Characteristics of the subjects who initiation of cigarette smoking (n=148)

Characteristics of the subjects	Frequency	Percentage
Gender		
Male	88	59.5
Female	60	40.5
Grad		
7-9	49	33.1
10-12	99	66.9
Age (year)		
Male	Mean = 14.1 , SD= 2.4 year, Maximum = 17 , Minimum = 7	
Female	Mean = 14.3, SD= 1.8, Maximum = 19 , Minimum = 10	

Data analysis

Data analysis was performed using SPSS-20 software, by descriptive statistic and chi-square.

3. Results and discussion**Results**

Research subjects were recruited from 7 schools regarding randomized technique. According to 747 subjects, the majority were students came from grade 10-12, female 55.7 %, age mean 15.7 with standard deviation 0.7 year, as shown in table 1.

Prevalence of initiation

According to sample were 747 subjects, the prevalence of initiation of cigarette smoking was 19.8.0%, 11.8% for male and 8.0% for female, age group that were the most of the prevalence of initiation of cigarette smoking was 12 – 14 years both male and female as shown in table 2 and 3.

Factors significant related to initiation

Statistic confirm that demographic factors were significant related to initiation of cigarette smoking that included gender ($\chi^2 = 17.165$, $p < 0.001$), age ($\chi^2 = 9.799$, $p = 0.007$), study class level ($\chi^2 = 7.143$, $p = 0.008$), Whereas, social factors were significant related to initiation of cigarette smoking that included access to cigarette advertising by community radio ($\chi^2 = 10.581$, $p = 0.014$), by community newspaper ($\chi^2 = 13.290$, $p = 0.004$), by community television ($\chi^2 = 20.547$, $p < 0.001$), cigarette advertising promotion ($\chi^2 = 35.784$, $p < 0.001$), giving cigarette sample ($\chi^2 = 29.901$, $p < 0.001$), as shown in table 4.

Discussion

The research findings revealed that study class level was related to the initiation of cigarette smoking significantly ($\chi^2 = 7.143$, $p = 0.008$). The subjects who studying in higher grad had more likely to try smoke

Table 3 Frequency and percentage of the subjects who initiation of cigarette smoking divided by age group and gender (n=148)

Variable		Age (Year Group)				Total	
		<12	12-14	15-17	18-19		
Gender	male	Count	10	42	29	7	88
		% within sex	11.4%	47.7%	33.0%	8.0%	100.0%
	female	Count	4	27	26	3	60
		% within sex	6.7%	45.0%	43.3%	5.0%	100.0%
Total		Count	14	69	55	10	148
		% within sex	9.5%	46.6%	37.2%	6.8%	100.0%

than the lower grade. However, this research just focusing on subjects age between 15-19 years old, so that the difference of study class level just 1 or 2 levels.

Gender was related to the initiation of cigarette smoking significantly ($\chi^2 = 17.165$, $p < 0.001$). The study result of the significance was a similarity with the prevalence of cigarette smoking initiation among males that was more likely higher than female in secondary schools in Canada [7]. Previous studies also found that the initiation of cigarette smoking among boys was significantly higher than girls in USA [8], the Eastern Mediterranean, Southeast Asia, and the Western Pacific [5].

This study also found that age was related to the initiation of cigarette smoking significantly ($\chi^2 = 9.799$, $p=0.007$). Age's subjects who initiation of cigarette smoking was ranged from 15 to 19 with a mean of 14.1 years (SD = 8.26) in male, and a mean of 14.3 years, SD = 8.26 in the female. This age accounted as adolescence developmental period, which is a sensitive characterized by extraordinary brain changes and high levels of emotionality, impulsivity, and risk-taking [5]. The findings of our study support previous research that cigarette smoking is tried in adolescents [5, 9].

Social factors including; access to cigarette advertising by community radio, by a community newspaper, by community television were significantly related to the initiation of cigarette smoking ($\chi^2 = 10.581$, $p = 0.014$, $\chi^2 = 13.290$, $p = 0.004$, $\chi^2 = 20.547$, $p < 0.001$, respectively). These findings supported the influencing of cigarette marketing that plays a role to decision making to try smoke of the subjects. In the research setting context, a semi-rural province in the central part of Thailand, the mass media such as community radio, newspaper, and television were easy to accessibility in all area of the setting more than the main mass media. Our study was supported that community sources of advertising were probably made the subjects decided to try smoke so that there is crucial to breaking the rout of social advertising of cigarette brand or company.

Whereas, social factors including cigarette advertising promotion, and giving cigarette sample were significantly related to the initiation of cigarette smoking ($\chi^2 = 35.784$, $p < 0.001$, $\chi^2 = 29.901$, $p < 0.001$, respectively). These findings revealed that the cigarette advertising promotion can also play a role to decision making to try smoke of the subjects. Cigarette advertising promotion and giving cigarette sample made a chance to try among the subjected and then led to a current smoker as well. Previous studies [5, 9] found that cigarette smoking among adolescents was influenced by the unique and overlapping combinations of biological, psychosocial, and environmental factors. Cigarette advertising promotion and giving cigarette sample made were two of the factors that indicated by our study. Furthermore, the government should be strongly practical regulated a comprehensive smoking ban in schools to prohibit both student and staff smoking on all school premises.

Limitation of our study

According to some limitation, we cannot show a causal effect of this phenomenon because of design limitation, next study should be a case-control or prospective study design to find out the causation. Others limitation is cognition and psychological factors of the subjects that far from this study.

4. Conclusions

This research was concluded many factors influencing initiation of cigarette smoking among students, which will be manipulated in any intervention. School or community nurses could address the combination of the influence of social factors especial cigarette advertising and sale promoting and smoking restrictions in a school setting. These finding might help to create a prevention program for adolescents away from trying or initiation smoking. Finally, the more initiation of cigarette smoking decrease, the more current smoker decrease as well.

Table 4 The results of variables testing of the relationship between independence and dependence variables (n=747)

Independence variables	Dependence variables: initiation of cigarette smoking		Pearson Chi-Square
	Yes Frequency	No Frequency	
Grad			$\chi^2 = 7.143$ p = 0.008
Grade 7-9	49	135	
Grade 10-12	99	464	
Age (Year Group)			$\chi^2 = 9.799$ p = 0.007
15	73	242	
16	67	271	
17	8	86	
Gender			$\chi^2 = 7.165$ p < 0.001
Male	88	243	
Female	60	356	
Access to cigarette advertising by television			$\chi^2 = 20.547$ p < 0.001
Yes	29	68	
No	42	148	
Not sure	49	313	
Have no chance	28	70	
Access to cigarette advertising by newspaper			$\chi^2 = 13.290$ p = 0.004
Yes	23	55	
No	74	333	
Not sure	30	165	
Have no chance	21	46	
Access to cigarette advertising by radio			$\chi^2 = 10.581$ p = 0.014
Yes	18	40	
No	89	374	
Not sure	25	146	
Have no chance	16	39	
Advertising promotion			$\chi^2 = 29.901$ p < 0.001
Yes	13	23	
No	112	548	
Not sure	23	28	
Giving cigarette sample			$\chi^2 = 35.784$ p < 0.001
Yes	15	23	
No	113	556	
Not sure	20	20	

Acknowledgements

The researchers' sincere gratitude goes to the Tobacco Control Capacity Building Center for research funding.

References

- [1] Vathesatogkit P, Charoenca N. Tobacco control: Lessons learnt in Thailand. **Indian J Public Health**. 2011; **55**: 228-33.
- [2] Termsirikulchai L, Benjakul S, Kengganpanich M, Theskayan N, Nakju S. **Thailand tobacco control country profile**. Bangkok: Charoendee Munkong Printing; 2008.
- [3] National Statistical Office. Ministry of Information and Communication Technology. **Smoking consumption survey and alcohol drinking of the Thai population in 2014**. Bangkok: National Statistical Office; 2016.
- [4] Mahidol University. Center for Research and Knowledge Management for Tobacco Control. **Situation of tobacco control in Thailand 2016**. Bangkok: Mahidol University; 2016.

- [5] National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health. **Preventing tobacco use among youth and young adults: a report of the surgeon general [Internet]**. Centers for Disease Control and Prevention (US); 2012. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK99236>.
- [6] Tobacco Control Capacity Building Center. **Sample size calculation**. 2016. Bangkok: Mahidol University; 2016
- [7] Hammond D, Reid JL, Cole AG, Leatherdale ST. Electronic cigarette use and smoking initiation among youth: a longitudinal cohort study. **CMAJ**. 2017; **189**(43): E1328-1336.
- [8] Yi Z, Mayorga M, Hassmiller Lich K, Pearson J. Changes in cigarette smoking initiation, cessation, and relapse among U.S. adults: a comparison of two longitudinal samples. **Tobacco Induced Diseases [serial on the Internet]**. (2017, Dec 1), [cited 7 February 2018]; 15(1): 1-11. Available from: E-Journals.
- [9] Diane, V. A., Sheryl, E., Anchalee, N., Najin, P., Duck-Hee, K. Factors related to cigarette smoking initiation and use among college students. **Tobacco Induced Diseases**. 2005; **3**(1): 27-40.