



## Original Article

# Predicting Factors for Retailers' Sale of Cigarettes to Adolescents in the Lower Part of Northern Region of Thailand

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### ABSTRACT

**Background:** Thailand is one of the members of WHO FCTC and has paid so much attention to preventing adolescents' access to tobacco. However, Thai adolescents still have access to tobacco with ease. The aim of this research was to investigate the predicting factors for the cigarettes sale to adolescents by the retailers in Thailand.

**Study design:** A cross-sectional study.

**Methods:** This cross sectional survey was conducted after a careful desk review of the relevant literature. Multistage random sampling technique was used to sample the survey participants (n = 675) who were retailers of tobacco in the lower northern region of Thailand. Data were collected by validated questionnaires and analyzed by descriptive analytic, chi-square test and binary logistic regression.

**Results:** More than half (58.7%) of the participants sell cigarettes to adolescents. Factors such as open display of cigarette at the point of sale, selling cigarettes in sticks, selling cigarettes by self-service, and reluctant disregard of buyers' age by the seller significantly correlated with and predicted, at 95% level of confidence, the behavior of retailers selling cigarettes to adolescents.

**Conclusions:** Thai adolescent's access to tobacco continues to be a serious public health problem. Therefore, the Ministry of Public Health and other relevant stakeholders saddled with the responsibility of interventions to scale up measures that would reinforce the law of Tobacco Control Act.

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## Introduction

Reducing adolescents' access to tobacco has been proposed by WHO as one of the key measures of the Framework Convention on Tobacco Control (FCTC) accepted to prevent uptake of smoking by adolescents for both in the initial stage and in the regular stage<sup>1-4</sup>.

Against this background, Thailand have enacted a law in line with the WHO FCTC, by setting the section 4 of Tobacco Control Act B.E .2535 which prohibits anyone from selling, exchange or giving tobacco to one whose age is less than 18 yr old, and the law has continuously been enforced for more than two decades. However, Thai adolescent' access to tobacco is still a measure problem across the entire Thai society. The national survey reported 13.5% rate of smoking among the Thai adolescents, and the average age of smoking initiation continues to decline from 16 yr in B.E .2550 to 15 yr in B.E .2557. About two-third (67.4 of the adolescents surveyed (% reported obtaining their cigarettes from retail stores that sell tobacco (tobacco retailers) and 44.0 % could buy cigarettes fairly easily or their ages had never been checked prior to selling cigarettes to them<sup>5,6</sup>.

The factors arising from tobacco retailer that affect adolescents' tobacco use were categorized into three: 1) factors related to the sellers; i.e. sex and age of the sellers, 2) factors related to the retail shops; i.e. type of the retail shop

(grocery-franchised shop), signboard warning against selling cigarettes to person under the age of 18, retail shops selling alcoholic drinks, and checking operation to ensure full compliance with the law by public sector, 3) factors relating to behaviors of selling cigarette; i.e. check the age of the buyers before sales, display of cigarettes at the point of sale, selling cigarettes by customer self-service, and selling cigarette sticks<sup>7</sup>. Nevertheless, those studies have some conflicts and there are no concrete conclusions of causal factors of selling cigarettes to adolescents and increased adolescents' tobacco access. Furthermore, the vast majority of the previous studies were conducted overseas and might have some limitations applying them to the problems and contexts in Thailand.

Recently, Thailand has started paying considerable attention towards studying more behavioral factors of retailers regarding tobacco sell to adolescents<sup>8,9</sup>. However, the focus of most of the studies is centered only on community level and the research design was purely qualitative; which has a general weakness of extrapolating its final results to the general public.

Therefore, this study addressed these gaps by examining the predicting factors of cigarettes sale to adolescents by retailers in the lower part of northern region of Thailand.

## Methods

This study cross-sectional survey, was not funded, by individuals or group or organization or company that deals with cigarette. Data were collected during January–May, 2016.

The targeted population was tobacco retailers enlisted among of all licensed tobacco retailers being conducted annually from the excise offices in the lower part of northern region of Thailand which consist of 5 provinces; i.e. Phitsanulok, Tak, Sukhothai, Phetchabun, and Uttaradit. The population of tobacco retailers from these five provinces was 28,244.

The sample size was 675 stores calculated by ratio between independent variables and sample at 1:50<sup>10</sup> (this study has 10 independent variables) and added a surplus of 35.0 % of the actual sample size in case of non-response bias; having established that the response rate from previous study was approximately 80.0%<sup>11</sup>. A multi stage random sampling method was subsequently used. This method consists of; 1) a stratified random sampling for 5 classes by number of province and calculated sample size in each classes by probability proportional to size, 2) simple random sampling by one district per one province and 3) systematic random sampling of the retailers in each district and the sampling interval from number of population (N) divided by number of sampling (n) was calculated.

### Research tools

Data were collected by questionnaires, consisting of three parts as follows :

**Part 1:** General information of seller, two questions with checklist and short answer; i.e .sex (male-female) and age (yr).

**Part 2 :**General information of retail shops, four questions with checklist; i.e .type of retail shop (grocery-franchised shop), does your retail shop have signboard to warn that you will not sell cigarette to one who is younger than 18 years old? (sign-no sign), does your retail shop also sell alcoholic drinks? (have-don't have), in the previous one year, has the operation of your shop ever been checked for compliance with the law by public sector? (never-ever been checked at least 1 time).

**Part 3:** Behaviors of selling cigarette, five questions with checklist; i.e .do you check age of buyers before you sell cigarette? (check-don't check), do you display cigarettes at the point of sale? (show-don't show, do you allow your customers to select cigarettes by themselves (self-service) ? (do-don't), do you split pack of cigarettes to sell rolls of cigarettes? (split –did not split), did you sell cigarette to persons under 18 years of age in the previous 30 days,? ( did-didnot).

Regarding the quality of research tool, the content validity index of each questions (I-CVI) were 0.80-1.00 and content validity index overall of questionnaire (S-CVI/Ave) was 0.95 and an estimated reliability coefficient (KR-20) for part 3 of questionnaire was 0.72

Because most tobacco retailers trust the village public health volunteers more than researchers who are outsiders<sup>8</sup>, we selected the village public health volunteers to collect the data in each district (10 people each). This would improve the credibility and accuracy of information the retailers provide. Prior to the data collection exercise, operational meeting was held to brief and clarify research objectives, process of data

collection, expected return and field survey skills for both self-administered questionnaire for samples who answered by themselves and reading questions to samples who were unable to read.

We used SPSS version 17.0 (Chigoe, IL, USA) in conducting all analyses. Descriptive analysis was conducted for both independent and dependent variables. Chi-square for categorical variables were used to analyze correlation between retailer and retail shop status as well as behaviors of selling cigarettes to adolescents. Binary logistic regression was applied to identify determinants of behaviors of selling cigarettes to adolescents.

A signed consent form was obtained from each participant before they were entered into the study. This study was approved by Naresuan University Research Ethics Committee with project approval No .115/58.

## Results

The response rate 97.5%. More than two-third of the participants (70.5%) was female and 86.2% of them aged between 18-59 yr, with a mean age of  $46 \pm 11.59$  yr. Most of the participants' shops were grocery or individual store (96.5%), and 60.2% did not have any warning signboard to indicate that the shop did not sell cigarettes to persons younger than 18 years. In addition, most of the shops (93.8%) sell alcoholic drinks; more than half (60.3%) of the participants' shops have never been checked in the previous one year to determine whether or not their selling cigarettes is in compliance with the law. Three public units are saddled with the responsibility of checking selling cigarettes to ensure compliance with law; there units are excise officers (22.7%), public health officers (12.9%), and policemen (5.5%). Analysis of the data also showed that, in the previous month, over half of the participants (61.4%) did not check ages of buyers before selling them (61.4%), 77.20% sold cigarette in sticks, 73.7% display cigarettes at the point of sale, 52.1% sold cigarette by self-service, and 58.7% of the participants confided selling cigarettes to adolescents or persons below the age of 18.

The only variable that significantly correlated with the retailers' behavioral factors and selling cigarettes to adolescents was displaying a warning signboard against selling cigarettes to adolescent ( $P < 0.001$ ). However, factors such as sex and age of sellers, type of retail shop, alcoholic drinks selling and being checked selling cigarettes in compliance with law were not significantly correlated with selling cigarettes to adolescents. On the other hand, all the four variables – checking the age of cigarette buyers, selling cigarette in sticks, display cigarettes at the point of sell, and selling by self-service, related to behavior of selling cigarettes were significantly correlated with selling cigarettes to adolescents ( $P < 0.001$ ) (Table 1).

Four variables that predicted behavior of selling cigarettes to adolescents at a statistical significance were selling cigarettes in sticks ( $OR_{adjusted} = 13.33$ ,  $P < 0.001$ ), display cigarettes at point of sale ( $OR_{adjusted} = 2.07$ ,  $P = 0.005$ ), selling cigarettes by self-service ( $OR_{adjusted} = 2.42$ ,  $P < 0.001$ ), checking age of buyers before selling cigarette ( $OR_{adjusted} = 2.42$ ,  $P < 0.001$ ), and for these four independent variables synergistically coordinated and significantly predicted the behavior of retailers' selling cigarettes to adolescents at

56.60 % (Pseudo R<sup>2</sup> = 0.566) at 95% confidence Interval ( $\chi^2$  goodness of fit,  $P = 0.166$ , with 6 degrees of freedom). On the other hand, lack of warning sign against selling cigarettes to under aged adolescents was not selected into the model of binary logistic regression (Table 2).

**Table 1:** The relationship between independent variables and tobacco sell to youths

Variables	Tobacco sell to youth		Tobacco did not sell to youth		P value
	Number	Percent	Number	Percent	
Gender					0.225
Male	121	62.3	73	37.6	
Female	265	57.1	199	42.9	
Age (yr)					0.359
≥59	337	59.4	230	40.6	
≤60	49	53.9	42	46.2	
Types of store					0.294
Grocery	370	58.3	265	41.7	
Franchise	16	2.5	7	1.1	
Sold alcoholic drinks					0.104
have	367	59.5	250	40.5	
don't have	19	46.3	22	53.7	
Sign board to warn					0.001
Have	125	47.7	137	52.3	
don't have	261	65.9	135	34.1	
Number of times checked the laws					0.341
Never	172	56.6	132	43.4	
Ever been checked at least 1 time	214	60.5	140	39.6	
Check age of buyers before sell tobacco					0.001
Check	175	68.9	79	31.1	
Did not check	211	52.2	193	47.8	
Selling cigarette in sticks					0.001
Did	376	74.0	132	26.0	
Did not	10	6.7	140	93.3	
Display cigarettes at point of sale					0.001
Show	326	77.8	93	22.2	
Did not show	60	25.1	179	74.9	
Selling cigarette by self-service					0.001
Did	294	85.7	49	14.3	
Did not	92	29.2	223	70.8	

**Table 2:** Factor predicted behavior of selling tobacco to youths.

Variables	Adjusted OR (95% CI) <sup>a</sup>	P value
Selling cigarette in sticks		
No	1.00	
Yes	13.33 (0.04, 0.16)	0.001
Display cigarettes at point of sale		
No	1.00	
Yes	2.07 (0.29, 0.80)	0.005
Selling cigarette by self-service		
No	1.00	
Yes	2.42 (0.26, 0.65)	0.001
Check age of buyers before sell tobacco		
Yes	1.00	
No	2.42 (0.26, 0.65)	0.001
Sign board to warn		
Yes	1.00	
No	1.27 (0.81, 2.00)	0.295

<sup>a</sup> Adjusted for gender, age, types of store, sold alcoholic drinks

## Discussion

Our results showed that more than half of tobacco retailers sold cigarettes to adolescents indicating the prevalent seriousness of adolescent access to tobacco as a public health problem<sup>2,3,12</sup>. Retailers who sell cigarette in sticks were more likely to sell cigarettes to adolescent than group of retailers who did not sell cigarette in sticks. This finding is consistent with previous studies which indicated that single cigarettes

was likely to increase adolescents' access to or buy cigarettes easily<sup>13,14</sup>. Additionally, it also influences smokers not to realize the danger of cigarettes through the warning pictures and toxic names printed on the packages. Furthermore, it can help to confirm the necessity of adding legal codes related to ban of selling individual cigarettes in the draft of New Cigarette Control Act of Thailand such that it can keep pace with the problem and increase effectiveness of measure to prevent adolescents from smoking<sup>5</sup>.

In addition, behavior of retailers who sell cigarette by self-service were more likely to sell cigarettes to adolescents than group of retailers who did not provide self-service. This is also consistent with a research results from abroad which reiterated that retailers which sell cigarettes by self-service or buyers can pick up products directly correlated to adolescents' access to cigarettes. Again, because these retailers neglected to check the age of buyers and they were unlikely to refuse to sell cigarettes to adolescents,<sup>15</sup> it is consistent with the findings of Phetphum et al.<sup>9</sup> which found that retailers were likely to allow regular customers to select cigarettes at point of sale by themselves because they believed that it freedom of choice will foster good relationship between the seller and the buyer. One of the findings in this study was that 61.4 % of retailers did not check age of customers before selling cigarettes and therefore, were more likely to sell cigarettes to adolescent buyers than group of retailers who asked age of buyers before selling them. This also conforms to another study, where negligence to check the age or ID cards of buyers before selling cigarettes correlated positively with selling cigarettes to adolescent<sup>16</sup>.

Moreover, retail shops, which display cigarettes at point of sale, are more likely to sell cigarettes to adolescent than group of retailers who did not display cigarettes at the point of sale. In this study, more than 60.0 % of the retail shops displayed cigarettes at the point of sale even though there has been a policy that bans cigarette display for more than 10 yr, and it is consistent with the previous study where more than half of retailers in a community displayed cigarette at point of sale<sup>15</sup>. Such display of tobacco products by the retailers where customers can easily spot is called "Interior advertising" strategy<sup>17,18</sup> and this is the single most important advertising channel for the tobacco industry<sup>19</sup>. Adolescents exposed to display of tobacco products by retailers are more susceptible to smoking and more likely to experiment and become smokers<sup>20,21</sup>.

In line with the findings of this study, the following suggestions are applicable to future: 1) Given that most of the selling activities of the retailers have never been checked for compliance with the law in the previous one year, this should be a wakeup call for the public sector at the area level to take their responsibilities based on the Tobacco Control Act B.E. 2535 and other related laws to speed up measures for checking and monitoring retailers to ensure compliance with the law in a continuous and regular manner, and 2) Besides most of the retailers exhibit certain behaviors of selling cigarettes which violate the Tobacco Control Act B.E. 2535. Therefore, this study proposes that the concerned agencies such as the Ministry of Public Health, police, and excise office should speed up measures that put in place public relations duties in order to create the awareness and the right sensitization coupled with strict checking and enforcing the law to punish culprits based as per the provision of the Tobacco Control Act B.E. 2535.

## Conclusions

Easy access to cigarettes by Thai adolescents is still a serious public health problem. The findings of this study is one of the best evidence-based facts that are needed to improve the activities of the law enforcement strategies of Thailand, and contribute to the design of programs in order to develop effective program to limit retailers selling cigarettes to adolescents .Such programs might adopt mixing the fortification of knowledge, right and appropriate attitudes, adapting behavior of selling cigarettes, law enforcement, community participation or social measure for adapting social norms related to decreasing selling cigarettes to adolescents . This proposed program must take into account the differences in terms of problems and social contexts in each important area.

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## Conflict of interest statement

The authors declared that there was no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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### Highlights

- More than half of retailers sold cigarette to adolescent.
- Most of the retailers violated the Tobacco Control Act e.g. sold cigarette in sticks, display cigarettes at point of sale.
- Retailers who violated the law were more likely to sell cigarettes to adolescent.

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