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Smoking Behavior Among 84 315 Open-University Students in Thailand

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Abstract

The aim of this study was to estimate the prevalence of smoking among students in an open university in Thailand and to describe smoking patterns in relation to the personal and social characteristics of the sample. A self-administered questionnaire survey was conducted in 2005 with 87,134 open-university students in Thailand; the respondents aged 15-60 years (N=84,315) are the subjects of this report. We found a substantial difference in smoking prevalence by sex, with a much higher proportion of smoking males (20.9%) than females (1.0%) in all socio-demographic categories. Smoking decreased among males with a higher level of education or income; in contrast, among females higher incomes were associated with more smoking. Most of the smokers started their behaviour in high school. The findings provide evidence for future policy making to reduce smoking among the younger population in Thailand, and in particular point to the need to preserve low smoking rates among females.

Keywords

smoking; Thailand; trends; university students

Introduction

In Thailand the proportion of smokers in the population has decreased in the past three decades from 54.7% in 1976 to 38.8% in 2006 in males and from 6.1% to 2.6% in females, although, the intensity of smoking has increased in the same period: Thai smokers consumed an average of 87.6 packs of cigarettes each in 2005 compared to 71 packs/person/year in 2001–2002.[1, 2]

Tobacco ranked the third highest health risk, after unsafe sex and alcohol, in Thailand in 2004 and contributed to 5.8% (570,000 DALYs[a]) of all DALY lost.[3] Smoking does not only pose health risks but also has direct and indirect economic impacts. Apart from income loss or increased expenses for treatment of smoking-related illnesses, the expense of cigarettes can be considered as a household burden, as, for example, among all the population in Bangkok, 15.7% of monthly personal income was spent on cigarettes in 2003.[4]

Smoking remains widely prevalent among the younger population of 15-24 year-olds in Thailand, despite some recent improvements in the last five years, when the proportion of males who smoked at these ages decreased from 32.1% in 2003 to 29.0% and 26.4% in 2004

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[a]DALY = Disability adjusted life year. It is a time-based measure that combines years of life lost due to premature mortality and years of life lost due to time lived in states of less than full health.

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and 2006, respectively. These proportions are about half the levels noted in male adults aged 25-59 years whose smoker proportions were 49.6% and 48.3% in 2004 and 2006.[1]

Prevention of smoking or inducing smoking cessation at younger ages is desirable as it can reduce the health impact to a greater extent than smoking cessation at an older age. Study of smoking behaviours among the young, specifically with university students in Thailand, has not been widely conducted; and further, available data cover only small samples in specific settings and are not contemporary.[5] This paper describes the results of a large scale study of distance learning open-university students in Thailand who are from various backgrounds and geographic locations around the country. These findings are intended as a source of information for better informed and targeted policy making and health education programme development.

Methods

As part of the Thai Health Risk Transition Project, [6] in 2005 a self administered questionnaire was mailed to all 200,000 students enrolled at Sukhothai Thammathirat Open University (STOU) in Thailand. These students range in age from 15-87 years with most belonging to the age group 20-35 years. The STOU is one of two open universities in Thailand and is open to anyone with completed junior high school and substantial work experience, or completed senior high school or equivalent diploma. Students study externally. In 2000, about 9.0 percent of Thai population aged 6 years and over had received tertiary level education.[7] These 200,000 students accounted for 4.1 percent of the population with tertiary education.

Response was received from 87,134 (44%) students in all regions in the country with ages ranged from 15 to 87 years. Among these, 84,315 of them were aged between 15 and 60, the age limits of the analyses reported here, who reported valid smoking status and included in this analysis.

The survey covered wide-ranging information in seven domains: 1) socio-demographic status, ethnicity and the domestic environment in the present and past, 2) occupation, income, and work stresses, 3) self-reported current height (in centimetres) and weight (in kilograms), size at birth (reported to government registers by relatives), whether breast fed, and health history, insurance and health services use, 4) social networks and trust, religion, spiritual health, sense of well-being and satisfaction, 5) food sources, preferences and intake, exercise and physical activity, 6) tobacco and alcohol use, use of transport, and transport injury risks, 7) respondent's family health background. More information on this survey has been described by Sleigh et al.[6]

Smoking status was derived from five questions. The first question was 'Have you ever smoked?'. Those who reported they had were then asked the age at which they started (At what age did you start smoking?), whether they were still smoking (Are you still smoking?), age at which they stopped (If you have quit smoking, at what age did you stop?), and the number of cigarettes they smoked each day (How many cigarettes do you smoke per day now, or did you smoke per day?). This paper presents results from descriptive analyses of smoking status in relation to socio-demographic-economic factors, including age, sex, education, income, geographic region, marital status, and home location. Smoking status was classified into three statuses – current smoker, former smoker and never smoker. The respondents who reported having smoked currently were classified as current smokers, those who reported having smoked and stopped were classified as former smokers, and those who reported they never smoked were classified as never smokers. Cross checking of these five smoking questions with each other was also carried out. When two or more responses were

contradictory, the whole record was examined and precedence given to the question involving the most detail concerning smoking. For example, if a student responded by marking the never smoking box and then gave details about age of starting smoking and gave further details about current smoking, that student was classified as a current smoker. Such editing was infrequent and involved less than 100 cases. The analyses were done separately for each sex. Age when smokers started smoking and the number of cigarettes they smoked per day were also analysed for both currents and former smokers.

The analysis was carried out in STATA using cross tabulation and logistic regression. As the age range for this study is very wide (15-60 years), all results on smoking status by each socio-demographic-economic factor were age-adjusted.

The research was approved by the Human Research Ethics Committee (Protocol: 2005/0350) of the Australian National University in late 2005.

Results

Attributes of Respondents

The main characteristics of the sample are shown in Table 1. Gender differences were assessed across socio-demographic variables. Of 84,315 students included in the analysis, 45.4% (N=38,235) were males and 54.6% (N=46,080) were females. A small majority of respondents (53.9%) in the sample was in the young age group (15-29 years), an age class dominated by females (61.1%), with most of the remainder aged 30-44 years (39.7%). These three age groups were selected by using a 15-year cutoff for young, middle and old age groups. Overall the most common educational attainment was a high school education (48.4%), women were about a fifth more likely than men to have university education (26.6% versus 22.8%, $p < 0.001$). Geographically, 24.5% and 17.2% were from the Central region and Bangkok, respectively, with only 6.5% were from the East. The representation from Bangkok, North and East was very similar to the national population distribution.[8]

The respondents did not on average have a high income. Slightly more than half (54.1%) earned 3,001- 10,000 Baht per month or approximately US$94-313[b]. About half (52.7%) were single, with rather more women than men in this status. The respondents were asked whether they had moved home since they were 12 years of age: 31.7% had moved from rural to urban areas and 4.3% from urban to rural areas; and the rest remained where they had been living either in rural or urban areas (43.9% rural at both times and 20.1% urban at both times).

Compared to the national adult population the STOU students are younger with a higher level of education. There are more single persons among the students than the national population which could be related to the younger age of the students.

Smoking by socio-economic factors

Overall, 10.4% of the sample reported being current smokers while 17.3% were former smokers and 72.3% reported never having smoked. Smoking status differed substantially by sex. Only 1.0% of females were current smokers, in contrast with males, among whom 21.6% reported smoking currently. Similarly, only 4.7% of females but 32.5% of males were former smokers. Thus the detailed analyses of influences on smoking patterns are restricted to males only.

[b]The exchange rate is 33.66 Thai Baht for 1 US$ as of 4 August 2008, according to the Bank of Thailand.

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Table 2 shows age-adjusted prevalence of each smoking status in males by each socio-demographic factor (row percentages shown). The prevalence of current smoking amongst men was similar at all ages, with about one-fifth reporting the behaviour. There was however a marked inverse trend of prevalence of current smoking with education ($p < 0.001$) as shown in Table 3, with respondents with a university degree having the lowest proportion of current smokers (13.2%), more than two times less than for those with high school education (30.1%). The respondents with a high school education also had more former smokers (34.7%) than other education groups. Likewise, the prevalence also decreased steadily with higher levels of income: 28.4% of those with income of less than 3,000 baht reported currently smoking compared with 18.0% among those with incomes above 30,000 Baht. A trend test showed statistical significance ($p < 0.001$) for both education and income. However, some of the income effects disappeared after adjusting for education (Table 3). Smoking was also somewhat more prevalent in the small group who reported other marital statuses (28.4%) than it was for those who were married (24.0%) or single (20.5%). Apart from an elevation among respondents who resided in the South (26.5% current smokers), there was little difference across geographic regions. Those who were urbanized at young ages reported higher levels of current smoking (28.2% and 24.2%) than those from rural settings (20.5% and 19.8%).

Among the small numbers of women smoking currently, the relation with income appeared to be opposite to that in males (increasing from 0.9% to 2.5% as income increased from lowest to highest (Figure 1), while for education, the proportion of current female smokers was similar across education levels (0.1%).

Age when the sample started smoking

The analysis found the highest proportions of the sample that had smoked started smoking at the age of 18 years (16.7%) and 15 years (15.6%). Both males and females display similar patterns in the age at which they started smoking, highly concentrated at 15-20 years. When dividing ages of starting smoking into five groups (i.e. <12 years (primary school age), 13-15 years (junior high school age), 16-18 years (senior high school age), 19-24 years (university age) and 25 years or over (adult age), it was found that more than 38.2% of smokers started smoking when they were in senior high school, while 27.5% and 25.6% started when they were in university and junior high school, respectively (Table 4). It should also be noted that more recent birth cohorts tended to initiate smoking at an earlier age than the older cohorts.

In Table 5, the age at which respondents started smoking shows a negative relation with parents' education in that the higher the education level of the parents, the higher the rate of starting smoking during the school ages. Hence, the rate of starting smoking at university and adult age decreased with higher levels of parents' education.

Students who had been living in urban homes, or who had moved from urban homes started smoking during the school ages more than those who had been living in rural homes or had moved from rural homes. Respondents who reside in Bangkok, the North and the Central region started smoking at younger ages than those who resided in other regions of the country.

Number of cigarettes smoked per day

More than 25.0% of male current smokers reported smoking 10 cigarettes per day while another 13.0% and 12.9% reported smoking 5 and 20 cigarettes per day, respectively.. There is a clear trend of an increasing number of cigarettes with age among male current smokers as shown in Figure 2.

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Females smoked fewer cigarettes than males. About half (51.0%) of female current smokers reported smoking 1-4 cigarettes per day and less than 9.0% reported smoking more than 10 cigarettes per day. Female current smokers also smoked less than male current smokers in most age groups with the exception of age 45-49 years where the mean of number of cigarettes smoked in females is higher than males but the number of female smokers in this age group was very small (N = 10) and much less than males.

Discussion

This study shows a striking difference in smoking prevalence for male and female students. Only 1.0% of females were current smokers, in contrast with males, among whom 21.5% reported smoking currently. Similarly, only 4.8% of females but 32.6% of males were former smokers. There was no constant age pattern of smoking in male current smokers as the highest proportion of current smokers was among those aged 30-44 years while the younger (15-29 years) and older (45-60 years) group had similar smoking proportions. However, the proportion of former male smokers increased with age, hence older respondents had quit smoking more than the younger ones. However, there is no further information available as the questionnaire only asked when the quitting was but not the reason for quitting. Education and income could play an influencing role in current smoking as the results show an inverse trend of current smoking with education and income.

Most of the sample started smoking at school ages, especially at 16-18 years. More recent birth cohorts on average started smoking at an earlier age than the older birth cohorts. This could in part reflect the increasing proportion of young Thais who grow up in urban environments. Urban environments seems to be more influential to smoking as students who had been living in urban homes or who had moved from urban homes started smoking during the school ages more than those who had been living in rural homes or had moved from rural homes. Surprisingly, the study found a negative relation between starting smoking at school age and parents' education in that the higher the education level of the parents, the higher the rate of starting smoking during the school ages. Notably, more than 40% of families with parents of tertiary level of education lived in the urban environments. It could be that the pro-smoking effect of urban environments outweighed any anti-smoking effect of tertiary educated parents.

This study has some limitations in that it is a self-administered questionnaire survey which received a response from 44% of the targeted sample. The other 56% who did not respond might have contributed to different results. However, we did note that the respondents were very similar to the overall student body for age, income, geographic area of residence and occupation, all of which were described in the STOU's annual report for 2005. There are also limitations in the questionnaire. For instance, the questionnaire did not define types of cigarettes; it was assumed that all types of cigarettes either manufactured or self-rolled were included and this could influence the result of higher proportion of current smokers among the lower income groups as self-rolled cigarettes are comparatively cheaper than the manufactured ones. In addition, the question asked at what age a former smoker stopped smoking. There were seven cases who responded at the age of their current age and might not be considered as former smokers. However, such a small number of potentially misclassified cases should not produce any bias in the analysis.

Despite such limitations, this study has several strengths particularly with its coverage of a large sample with wide geographic coverage and a good range of social and educational levels. These features allow very useful investigation of nationally influential factors for smoking. Since this sample is the younger adult population they are the future of Thailand.

The proportion of current smokers in our sample is significantly lower than that in the general population which a recent survey has shown to be 49.1% in males and 2.7% in females.[9] Comparing across age groups, the smoking prevalence is also lower in each age group. This lower proportion can be attributable to the distinct characteristic of this sample of open-university students who have a higher level of education (at least high school) than the general population. As shown in the results, students with higher levels of education smoked less, further confirming the continuing importance among the young of educational achievement as a potential brake on smoking uptake as seen in earlier surveys on smoking in the general population.[10] Therefore, education could be a factor contributing to the difference in smoking between the STOU sample and the general population. Education could help increase awareness of the harms of smoking.

Although smoking prevalence amongst females is low (1.0% reported as current smokers), the trend of females smoking in the Thai population aged 15-24 years shows a four-fold increase from 0.3% in 1999 to 1.3 % in 2006.[1] There is an obvious trend of an increase in female smoking in the higher income groups of the STOU sample which could be similar to the situation of the general female population. A campaign against smoking amongst females should also receive more attention in order to prevent a higher level of smoking amongst these groups, thereby preserving their historically low prevalence. Besides, smoking is higher among married males and those with other marital statuses, female partners could play a role in influencing smoking cessation or preventing smoking in their male partners.

The findings also show that personal income has an influence on smoking and the number of cigarettes smoked per day. The sub-group with low incomes smoked a higher number of cigarettes though they might be more likely to smoke self-rolled cigarettes which are considerably cheaper than the manufactured or imported cigarettes that can be afforded by those with higher income. [11] The number of cigarettes smoked by the STOU student sample (9 cigarettes per day) is similar to the number smoked by the general Thai population (10 cigarettes per day on average). In addition, the number of cigarettes smoked by female STOU respondents is much lower than the number smoked by female students in other countries such as Australia.[12] This could be due to cultural barriers which make smoking an unacceptable behaviour for females in Thailand.

Comparing with neighbouring countries, such as Malaysia, we found the prevalence of smokers in the female sample younger than 25 years is much lower than the prevalence among the Malaysians of the same age.[13] Moreover, smoking prevalence among Thai students is also lower than in university students in other countries, both for male and female students.[13-18] However, studies in many other countries were conducted specifically for on-campus university students and the sample sizes are much smaller than those in our study which covers high numbers of students from an open university.

When we examined the ages at which our sample started smoking we found that 95.6% started before the age of 25 and a high proportion started at high school. This can be attributable to peer pressure and an external environment which provided a temptation to start smoking. A survey with young adolescent age 13-15 years in Thailand found 20% of respondents observed that boys who smoked were more attractive and 58.3% responded that boys who smoked had more friends.[19] This perception might be another cause of starting to smoke at school age. With a high proportion of high school students smoking, health education should focus on this part of the population.

Further analysis and study will be needed, particularly on the possible factors contributing to the difference in smoking prevalence between university students and the general

population. The findings will provide good evidence for better policy making to reduce smoking prevalence in Thailand. Policies on smoking control in Thailand have been successfully implemented to reduce smoking prevalence by 25% from 1996 to 2006. Better specific target policies, for instance preventing the younger birth cohorts to start smoking when they are in high schools, will help reduce smoking prevalence in Thailand. Besides, research on the health and economic impacts of smoking among university students will alert smokers and make them more aware of the risks involved in smoking.

Conclusion and recommendation

The study found substantial differences between males and females in the proportion of smokers, with a higher prevalence of males smoking than females in all socio-demographic categories. A higher proportion of the younger age respondents also smoked.

It is recommended that for better and more effective smoking prevention and control, related policy measures should be formulated specifically for the younger group of the Thai population and those adults with lower levels of education and income. As well, a great effort should be made to preserve the low smoking rate among Thai females.

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References

1. Wibulpolprasert, S. Thailand Health Profile 2005-2007. Ministry of Public Health; Nonthaburi, Thailand: 2008.
2. Wibulpolprasert, S., editor. Thailand Health Profile 2001-2004. Ministry of Public Health; Nonthaburi, Thailand: 2005.
3. Burden of Disease and Injury in Thailand Project. Burden of disease and health risks in Thai population in 2004. Ministry of Public Health; Nonthaburi, Thailand: 2007.
4. Kasikorn Research Centre. Smoking Behaviours of Bangkok's Residents. Kasikorn Research Centre; Bangkok: 2003.
5. Nanakorn S, Osaka R, Chusilp K, Tsuda A, Maskasame S, Ratanasiri A. Gender differences in health-related practices among university students in northeast Thailand. Asia Pac J Public. 1999; 11(1):10–5.
6. Sleigh A, Seubsman S-a, Bain C, the Thai Cohort Study Team. Cohort Profile: The Thai Cohort of 87 134 Open University Students. Int J Epidemiol. 2008; 37(2):266–72. [PubMed: 17911153]
7. National Statistical Office Thailand. Population and household survey 2000. Available from URL http://service.nso.go.th/nso/nso_center/project/table/files/C-pop/2543/000/00_C-pop_2543_000_010000_01000.xls Accessed on 20 March 2009
8. National Statistical Office Thailand. Key statistics of Thailand 2005. National Statistical Office, Ministry of Information and Communication Technology; Bangkok: 2005.
9. Porapakkham, Y.; Boonyarataphan, P. Report of the National Health Examination Survey III 2003-2004. Health Systems Research Institute; Nonthaburi, Thailand: 2007.
10. Chokevivat V, Limwattananon S, Bundhamcharoen K, Prakongsai P, Tangcharoensathien V. Health Risk Distribution by Socio-economic Status and Educational Levels of Thai Households: Who smoked and drink more? Journal of Health Science. 2007; 16(supplement):s1–s17.
11. Yong HH, Borland R, Hammond D, Sirirassamee B, Ritthiphakdee B, Awang R, et al. Levels and correlates of awareness of tobacco promotional activities among adult smokers in Malaysia and

Thailand: findings from the International Tobacco Control Southeast Asia (ITC-SEA) Survey. Tob Control. 2008; 17(1):46–52. [PubMed: 18218808]

12. Smith D, Leggat P. Tobacco smoking habits among a complete cross-section of Australian nursing students. Nurs Health Sci. 2007; 9(2):82–9. [PubMed: 17470180]
13. Manaf RA, Shamsuddin K. Smoking among Young Urban Malaysian Women and its Risk Factors. Asia Pac J Public. 2008; 20(3):204–13.
14. Maziak W, Hammal F, Rastam S, Asfar T, Eissenberg T, Bachir M, et al. Characteristics of cigarette smoking and quitting among university students in Syria. Prev Med. 2004; 39(2):330–6. [PubMed: 15226042]
15. Steptoe A, Wardle J, Cui W, Baban A, Glass K, Pelzer K, et al. An international comparison of tobacco smoking belief and risk awareness in university students from 23 countries. Addiction. 2002; 97(12):1561–71. [PubMed: 12472640]
16. Haddad LG, Malak MZ. Smoking habits and attitudes towards smoking among university students in Jordan. Int J Nurs Stud. 2002; 39:793–802. [PubMed: 12379297]
17. Ohida T, Yokoyama E, Kaneita Y, Takemura S. Smoking among Japanese nursing students: nationwide survey. J Adv Nurs. 2005; 49(3):268–75. [PubMed: 15660551]
18. Saatci E, Inan S, Bozdemir N, Akpinar E, Ergun G. Predictors of smoking behaviour of first year university students: questionnaire survey. Croat Med J. 2004; 45(1):76–9. [PubMed: 14968458]
19. Rudatsikira E, Muula AS, Siziya S, Mataya RH. Correlates of cigarette smoking among school-going adolescents in Thailand: findings from the Thai Global Youth Tobacco Survey 2005. Int Arch Med. Jun 11.2008 1(8) 2008.

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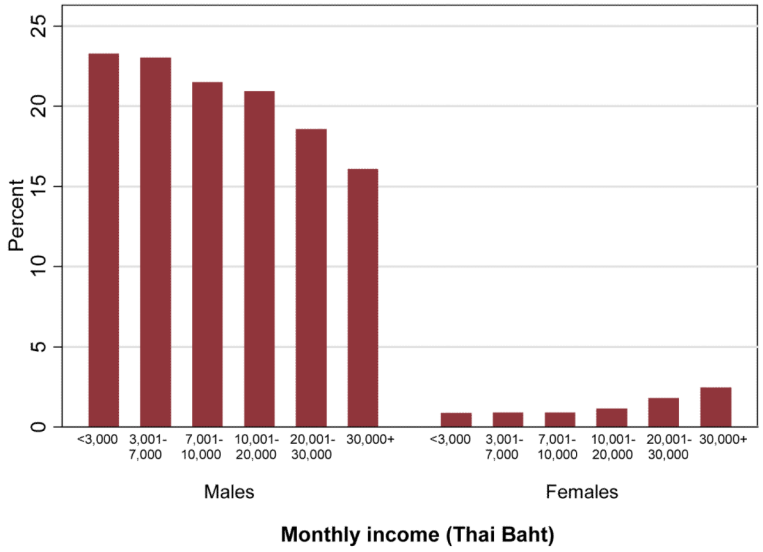

Figure 1.
Percent of current smokers by level of personal monthly income

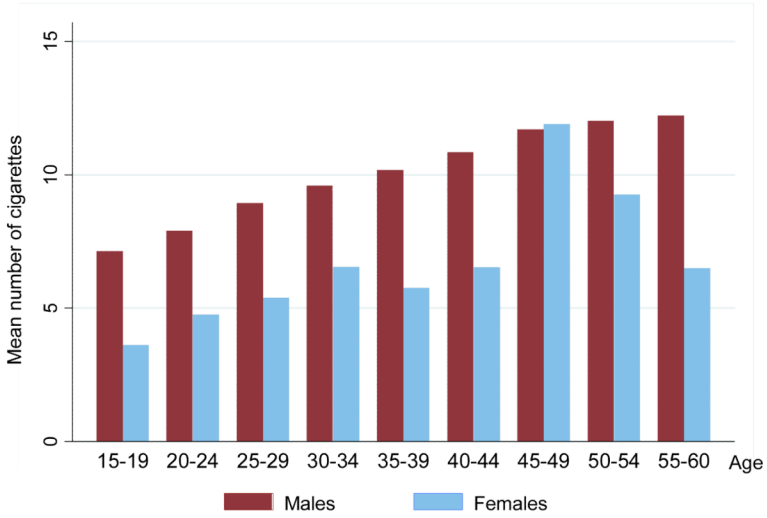

Figure 2.
Average number of cigarettes smoked per day by male and female current smokers in each age group

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Table 1

General characteristics of the sample (N = 84,315)

Socio-demographic characteristics	Total		Male		Female	
	N	(%)	N	(%)	N	(%)
Sample at their current ages						
15-29 years	45,427	(53.9)	17,275	(45.2)	28,152	(61.1)
30-44 years	33,475	(39.7)	17,376	(45.5)	16,099	(34.9)
45-60 years	5,413	(6.4)	3,584	(9.4)	1,829	(4.0)
Total	*84,315*	*(100)*	*38,235*	*(100)*	*46,080*	*(100)*
Education						
High School	40,704	(48.4)	20,955	(54.9)	19,749	(43.0)
Diploma/Certificate	22,817	(27.1)	8,675	(22.2)	14,142	(30.8)
University	20,574	(24.5)	8,515	(22.3)	12,059	(26.2)
Total	*84,095*	*(100)*	*38,145*	*(100)*	*45,950*	*(100)*
Region						
Bangkok	14,353	(17.2)	5,547	(14.6)	8,806	(19.2)
Central	20480	(24.5)	8,581	(22.7)	11,899	(26.0)
North	15,335	(18.3)	9,211	(19.7)	8,189	(17.2)
Northeast	17,400	(20.8)	7,458	(24.4)	7,877	(17.9)
East	5,143	(6.5)	4,780	(6.1)	6,161	(6.2)
South	10,941	(13.1)	2,314	(12.6)	2,829	(13.5)
Total	*83,652*	*(100)*	*37,891*	*(100)*	*45,761*	*(100)*
Personal Monthly Income						
<3,000 Baht	9,040	(11.0)	4,318	(11.6)	9,040	(10.5)
3,001-7,000 Baht	25,286	(30.7)	8,814	(23.6)	25,286	(36.7)
7,001-10,000 Baht	19,225	(23.4)	8,582	(23.0)	19,225	(23.7)
10,001-20,000 Baht	20,002	(24.3)	10,607	(28.4)	20,002	(20.9)
20,001-30,000 Baht	5,164	(6.3)	2,872	(7.7)	5,164	(5.1)
>30,000 Baht	3,531	(4.3)	2,118	(5.7)	3,531	(3.1)
Total	*82,248*	*(100)*	*37,311*	*(100)*	*82,248*	*(100)*
Marital Status						

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Socio-demographic characteristics	Total		Male		Female	
	N	(%)	N	(%)	N	(%)
Single	43,867	(52.7)	17,208	(45.7)	26,659	(58.5)
Married	32,199	(38.7)	17,503	(46.5)	14,696	(32.2)
Others *	7,217	(8.7)	1,604	(7.9)	2,007	(9.3)
Total	*83,283*	*(100)*	*1,359*	*(100)*	*2,247*	*(100)*
Home location when aged 12 years and now						
Rural – Rural	36,551	(43.8)	17,071	(45.3)	19,480	(42.7)
Rural – Urban	26,386	(31.7)	12,181	(32.3)	14,205	(31.2)
Urban – Urban	3,605	(20.1)	1,651	(18.0)	1,954	(21.8)
Urban – Rural	16,761	(4.3)	6,805	(4.4)	9,956	(4.3)
Total	*83,303*	*(100)*	*37,708*	*(100)*	*45,595*	*(100)*

Note:

* Other marital status covered separated, divorced, widow.

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Table 2

Smoking status in males by each socio-demographic factor, the % shown had been age-adjusted [N = 38,235]

Socio-economic status	Total N	Smoking Status					
		Current smoker		Former smokers		Never smoker	
		N	(%)	N	(%)	N	(%)
Current age of the sample							
15-29 years	17,275	3,513	(20.0)	4,245	(24.6)	9,517	(55.4)
30-44 years	17,376	4,029	(23.0)	6,420	(37.0)	6,927	(39.9)
45-60 years	3,584	708	(19.8)	1,757	(49.2)	1,119	(30.9)
Education level							
High school	20,955	5,187	(30.1)	7,019	(34.7)	8,749	(35.1)
Diploma/certificate	8,675	1,857	(21.4)	2,787	(32.7)	4,031	(46.0)
University degree	8,515	1,185	(13.2)	2,584	(27.6)	4,746	(59.1)
Personal income							
<3,000 Baht	4,318	1,005	(28.4)	1,058 |	(30.0)	2,255	(41.6)
3,001-7,000 Baht	8,814	2,029	(24.4)	2,440	(31.3)	4,345	(44.3)
7,001-10,000 Baht	8,582	1,845	(21.0)	2,726	(33.1)	4,011	(45.9)
10,001-20,000 Baht	10,607	2,223	(19.3)	3,927	(33.1)	4,457	(47.6)
20,001-30,000 Baht	2,872	534	(18.0)	1,146	(28.3)	1,192	(53.3)
>30,000 Baht	2,118	341	(18.0)	859	(28.1)	918	(53.4)
Marital status							
Single	17,208	3,511	(20.5)	4,137	(25.6)	9,560	(53.9)
Married	17,503	3,715	(24.0)	7,011	(41.0)	6,777	(34.8)
Other marital statuses *	2,963	853	(28.4)	1,057	(38.3)	1,053	(33.3)
Geographic region							
Bangkok	5,547	1,152	(20.6)	1,756	(31.0)	2,639	(48.4)
Central	8,581	1,771	(20.3)	2,700	(31.5)	4,110	(48.3)
North	7,458	2,105	(18.6)	3,116	(33.8)	3,990	(47.7)
Northeast	9,211	1,404	(22.6)	2,523	(33.8)	3,531	(43.7)
East	2,314	1,269	(19.6)	1,432	(33.1)	2,079	(47.1)
South	4,780	456	(26.5)	765	(30.7)	1,093	(43.0)

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Socio-economic status	Total N	Smoking Status					
		Current smoker		Former smokers		Never smoker	
		N	(%)	N	(%)	N	(%)
Home location when aged 12 years and now							
Rural – Rural	17,071	3,514	(20.5)	5,423	(32.5)	8,134	(46.9)
Rural – Urban	12,181	2,483	(19.8)	4,245	(34.1)	5,453	(46.0)
Urban – Rural	1,651	469	(28.2)	544	(31.1)	638	(40.7)
Urban – Urban	6,805	1,661	(24.2)	2,027	(29.2)	3,117	(46.5)

Note:

* Other marital status = divorced, widowed, separated, living with partners

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Table 3

Relationship between male current smokers and education and income levels (age adjusted)

Factor	Odds Ratio		95%CI	*P* (trend)
	Crude	Adjusted		
Education level *				0.000
High school	1.00	1.00	-	
Diploma/certificate	0.84	0.84	0.8-0.9	
University degree	0.50	0.51	0.5-0.5	
Personal income **				0.014
<3,000 Baht	1.00	1.00	-	
3,001-7,000 Baht	0.98	1.00	0.9-1.1	
7,001-10,000 Baht	0.90	0.98	0.9-1.1	
10,001-20,000 Baht	0.88	0.99	0.9-1.1	
20,001-30,000 Baht	0.75	0.93	0.8-1.1	
>30,000 Baht	0.63	0.80	0.7-0.9	

Note:

* For education level, secondary education was use as the reference

** For income level, <3,000 Baht was used as the reference

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Table 4

Age when male former and current smokers started smoking, by birth cohort

Birth cohort	N	Age when started smoking				
		<=12 yrs (PS)	***13-15 yrs (JHS)***	***16-18 yr (SHS)***	***19-24 yrs (Uni)***	**25 yrs+**
1987-1990 (age 15-18 years)	49	12.2	46.9	40.8	-	-
1981-1986 (age 19-24 years)	2,746	6.8	31.7	37.7	23.7	-
1971-1980 (age 25-34 years)	9,026	4.0	29.1	39.4	24.3	3.1
1961-1970 (age 35-44 years)	5,870	3.8	19.8	37.2	32.5	6.8
1945-1960 (age 45-60 years)	2,407	4.4	19.9	37.0	31.0	7.7
Total	*20,098*	*4.4*	*25.7*	*38.2*	*27.4*	*4.3*

Note:

PS = Primary school ages (year 1-6)

JHS = Junior high school ages (year 7-9)

SHS = Senior high school ages (year 10-12)

Uni = University age

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Table 5

Association between parents' education, home locations and geographic regions and starting smoking at the school ages (when they were 18 years old or younger)

Socio-economic factor	Started smoking at school ages (≤ 18 years old)					
	%	Crude OR	Adjusted OR*	Adjusted OR**	95%CI	P Trend
Mother's education						0.001
No formal education	67.9	1.0	1.0	1.0	-	
Primary	67.5	1.1	1.1	1.2	(1.1-1.3)	
Secondary	72.3	1.4	1.4	1.0	(0.9-1.1)	
Tertiary	76.7	1.5	1.6	1.1	(1.0-1.2)	
Father's education						0.000
No formal education	69.2	1.0	1.0	1.0	-	
Primary	66.5	1.0	1.0	0.9	(0.9-1.0)	
Secondary	70.8	1.3	1.3	1.1	(1.0-1.3)	
Tertiary	75.3	1.3	1.4	1.1	(1.0-1.3)	
Home location when 12 years old and now						0.000
Rural – Rural	67.0	1.0	1.0	1.0	-	
Rural – Urban	66.9	1.0	1.0	1.0	(0.9-1.1)	
Urban – Rural	74.6	1.5	1.5	1.5	(1.3-1.6)	
Urban – Urban	72.5	1.2	1.3	1.2	(1.1-1.3)	
Geographic region						0.000
Bangkok	70.7	1.0	1.0	1.0	-	
Central	69.1	1.0	1.0	1.0	(0.9-1.3)	
North	70.2	1.1	1.1	1.2	(1.1-1.3)	
Northeast	65.9	0.9	0.9	0.9	(0.9-1.0)	
East	66.5	1.4	1.4	1.5	(1.3-1.6)	
South	67.4	0.9	1.0	1.0	(0.9-1.1)	

Note:

*Odds Ratios adjusted to age

**Odds Ratios adjusted to all factors (mother's education, father's education, home location and region)