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Tobacco Use among Thai Students: Results from the 2015 Global Youth Tobacco Survey

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Abstract

Background: Tobacco use often starts in adolescence and is a leading cause of premature mortality. Two previous rounds of the global youth tobacco survey (GYTS) found that a significant proportion of Thai youth currently smoke. **Objectives:** We conducted the third round of GYTS in Thailand in 2015 to monitor trends in tobacco use. **Methods:** We selected 31 public and private secondary schools using random sampling based on probability proportional to school enrolment. In each school, we selected 1–3 classes (Grades 7–9) by random sampling. All students in these classes from 30 schools (one school declined) completed a self-administered standard questionnaire in the Thai language. The association between tobacco use and independent variables was examined using univariate and multivariable logistic regression analysis. **Results:** Of 1876 students, 1721 were aged 13–15 years. Overall, 15% of students currently used tobacco; boys 21.8% and girls 8.1%. The prevalence of current cigarette smoking was 11.3%; 3.3% students currently used electronic cigarettes. Exposure to secondhand smoke (SHS) at home, school, and in enclosed public places was reported by 33.8%, 47.9%, and 38.6%, respectively. Among current smokers, 44% were not stopped from purchasing cigarettes despite being underage. Higher tobacco use was associated with being older, male, exposed to SHS, in possession of an object with a tobacco logo, and being offered a free tobacco product by a tobacco company. **Conclusion:** Tobacco and cigarette use among Thai students remains high. Underage current smokers have easy access to cigarettes. Urgent steps are needed to curb the access of youth to tobacco.

Key words: Cigarette smoking, electronic cigarettes, global youth tobacco survey, prevalence, shisha, Thailand, tobacco, youth

INTRODUCTION

Tobacco use is a leading cause of preventable morbidity and premature mortality worldwide.^[1,2] The World Health Organization estimates that >6 million people die each year from smoking or exposure to secondhand smoke (SHS).^[3] Tobacco use remains a serious public health and development issue in Thailand. According to the Global Burden of Disease study, tobacco use accounts for >10% of the disease burden in Thailand.^[4] In 2013, the total economic burden from smoking was 75 billion Thai Baht, amounting to 18.2% of total health expenditure and 0.8% of the national gross domestic product.^[5]

Adolescence is a vulnerable period for initiation of smoking – most smokers begin using tobacco before the age of 18 years.^[6] Therefore, tobacco companies spend billions to market their products to the young. Nearly, four out of five Thai adults start smoking during their teen years.^[7] The overall

trend in cigarette use among adults has decreased fairly steadily since 1991 and has plateaued in recent years.^[8] However, the trend in cigarette use among youth has not decreased in the past decade. In the previous two rounds of the Global youth tobacco survey (GYTS) in 2005 and 2009, the prevalence of current cigarette use remained high at about 11%.^[9] In another nationally representative population-based survey among adolescents, tobacco use increased from 12% to 18.3% between January 2005 and March 2008.^[10] In addition, the National Statistical Office survey in 2011 found that the starting age of recent smokers was as low as 6 years of age.^[11]

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Reducing tobacco use among youth is a key to ending the tobacco epidemic. Trends in the prevalence of tobacco use among youth indicate trends in new smokers – this is an important indicator that needs to be systematically monitored. GYTS, a systematic youth tobacco survey, is a globally standardized, robust tool for monitoring the prevalence of tobacco use as well as for examining tobacco control measures.^[12] Data from the GYTS can provide the evidence base needed for policy formulation and implementation to better control tobacco use among youth. We conducted the third round of GYTS in Thailand, to estimate the prevalence of tobacco use, exposure to SHS, access to tobacco products, and other important indicators among youth.

MATERIALS AND METHODS

We conducted the third round of GYTS from November to December 2015 using the standard methodology.^[12] We carried out a cross-sectional survey among students aged 13–15 years corresponding to Grades 7–9 in sampled public and private secondary schools from all over Thailand. We used a two-stage cluster sampling methodology to produce a representative sample of students. The sampling frame consisted of all public and private schools from all over Thailand with students in the age group of 13–15 years. A total of 11,503 schools were included in the sampling frame. In the first stage, we selected 31 schools using probability proportional based on the size of school enrollment. Schools having <40 students were excluded from the study. At the second stage, we randomly selected classes within each selected school. All students in the selected class were invited to participate in the survey irrespective of age. A total of 1876 eligible students in 65 classes completed the survey.

The standard core questionnaire (42 multiple-choice questions) with a set of optional questions (15 questions) was adapted to meet country needs and translated into the Thai language and back into English independently to check for accuracy. The questionnaire covered the following topics: tobacco use (smoked and/or smokeless); cessation; SHS; pro-and anti-tobacco media and advertising; access to and availability of tobacco products; and knowledge and attitudes regarding tobacco use. Questions on the use of e-cigarettes were included for the first time in this third round of GYTS.

Using standard definitions (Centers for Disease Control, GYTS questionnaire guide, version 1.0, 2012), “ever use” was defined as the use of tobacco even once in the lifetime. “Current use” was defined as the use of tobacco within 30 days of the survey. Tobacco use included smoking cigarettes, *shisha* and e-cigarettes, or use of smokeless tobacco, such as chewing shredded tobacco, inhaling through the nose, and chewing betel leaves with tobacco.

Data were analyzed using SUDAAN 9.0 (Research Triangle Institute, Research Triangle Park, North Carolina, USA), which computed standard errors of the prevalence estimates and produced 95% confidence intervals (CIs). A weighting factor

was applied to each student record to account for nonresponse by school, class and student, and probability of selection at the school and class levels. Among 31 sampled schools, one school declined to participate. Therefore, the school response rate was 96.8%. The class response rate was 100% and the student response rate among 30 schools was 89%, nonresponse being due to the absence of some students on the day of the survey. Thus, the overall response rate was 86.1%.

To assess the association between tobacco smoking and selected variables, we carried out univariate and multivariable logistic regression analysis. Tobacco use was the dependent variable (dichotomous variable) in our model and we included a number of predictor variables: age, gender, parental tobacco use, exposure to SHS, possession of objects with tobacco logo, exposure to tobacco advertisement on internet and at point of sale, being approached by tobacco company representative, and exposure to anti-tobacco messages in the media. There was no significant multicollinearity observed among the predictor variables. The predictive power obtained from the Cox-Snell R^2 for the dependent variable was computed using Taylor linearization methods assuming with replacement design. Although the $R^2 = 0.152$ was comparatively lower than the desired level for behavioral studies like this one, our model was fitted to the data very well according to goodness-of-fit tests. Adjusted odds ratios (AOR) and 95% CIs were computed using SUDAAN. $P < 0.05$ was considered statistically significant.

The institute for the development of human research protection provided ethics approval for the GYTS. Anonymity, confidentiality, and willingness of the participants were ensured, and consent obtained from each participant and their parents.

RESULTS

Tobacco use and exposure to secondhand smoke

Of 1876 students who participated in the survey, 1721 were aged 13–15 years (51.2% boys and 48.2% girls). Overall, 15.0% (95% CIs: 11.2%–19.8%) of students were current tobacco users and 11.3% (95% CI: 8.2%–15.3%) currently smoked cigarettes [Table 1]. Smokeless tobacco was much less used than smoked tobacco (2.7% vs. 14.0%). Use of new tobacco products such as electronic cigarettes was reported for the first time. A total of 3.3% (95% CI: 2.2%–5.1%) of students currently used electronic cigarettes and 5.6% (95% CI: 3.7%–8.2%) were current *shisha* smokers. The use of all forms of tobacco was three times more common among boys than girls. In all, 7.4% (95% CI: 5.6%–9.7%) of never smokers mentioned that they may start using tobacco in the future.

Exposure to SHS at home, school, and in enclosed public places was reported by 33.8% (95% CI: 29.6%–38.3%), 47.9% (95% CI: 41.9%–54.0%), and 38.6% (95% CI: 33.5%–44.0%) students, respectively. More than three-fourths of students (77.6%; 95% CI: 74.7%–80.4%) thought that SHS was harmful to them and a similar proportion of students (78.9%; 95% CI: 76.1%–81.4%) was in favor of banning smoking at outdoor public places.

Table 1: Prevalence of tobacco use and exposure to secondhand smoke among students aged 13-15 years, by gender, Global Youth Tobacco Survey, Thailand, 2015

Indicators	Percentage (95% CI) (n)		
	Overall	Boys	Girls
Tobacco use			
Current tobacco users	15.0 (11.2-19.8) (1630)	21.8 (16.8-27.8) (742)	8.1 (5.1-12.5) (886)
Current tobacco smokers	14.0 (10.4-18.6) (1642)	20.7 (16.0-26.3) (748)	7.1 (4.4-11.2) (892)
Current cigarette smokers	11.3 (8.2-15.3) (1675)	17.2 (12.9-22.5) (766)	5.2 (3.1-8.6) (907)
Current smokers of other tobacco	6.3 (4.3-9.2) (1662)	8.9 (6.0-13.1) (758)	3.6 (2.3-5.6) (902)
Current smokeless tobacco users	2.7 (2.0-3.6) (1685)	4.1 (2.8-5.9) (767)	1.3 (0.6-2.6) (916)
Current e-cigarette smokers	3.3 (2.2-5.1) (1720)	4.7 (3.2-7.1) (793)	1.9 (0.8-4.0) (925)
Current <i>shisha</i> smokers	5.6 (3.7-8.2) (1701)	7.9 (5.5-11.3) (785)	3.1 (1.5-6.2) (914)
Ever tobacco users	34.9 (29.1-41.1) (1655)	46.6 (39.2-54.1) (758)	22.6 (17.3-29.0) (895)
Ever tobacco smokers	33.1 (27.3-39.5) (1665)	44.7 (37.6-51.9) (763)	21.1 (15.7-27.7) (900)
Ever cigarette smokers	29.0 (23.3-35.5) (1689)	39.5 (32.2-47.2) (772)	18.2 (13.4-24.2) (915)
Ever smokers of other tobacco	13.3 (9.8-17.8) (1660)	18.2 (13.0-24.8) (757)	8.2 (5.7-11.6) (901)
Ever smokeless tobacco users	4.7 (3.6-6.1) (1675)	6.1 (4.0-9.2) (760)	3.2 (2.4-4.4) (913)
Ever tried e-cigarette	5.4 (3.4-8.5) (1718)	7.7 (4.9-12.0) (790)	3.0 (1.6-5.4) (926)
Ever tried <i>shisha</i>	13.9 (9.9-19.2) (1714)	17.8 (12.5-24.9) (787)	9.8 (6.5-14.6) (925)
Secondhand smoke exposure			
Exposed at home	33.8 (29.6-38.3) (1711)	31.3 (26.1-37.0) (788)	36.6 (32.1-41.4) (921)
Exposed inside any enclosed public place	38.6 (33.5-44.0) (1720)	31.3 (26.2-36.9) (793)	46.5 (39.6-53.4) (925)
Exposed at any outdoor public place	37.7 (33.0-42.7) (1717)	32.1 (27.1-37.5) (791)	43.7 (37.6-50.0) (924)
Exposed at schools (saw anyone smoking in the school area)	47.9 (41.9-54.0) (1699)	50.5 (44.2-56.7) (779)	45.2 (37.9-52.6) (918)
Thought secondhand smoke is harmful to them	77.6 (74.7-80.4) (1716)	72.6 (67.6-77.0) (789)	83.0 (79.0-86.3) (925)
Favored banning smoking at outdoor public places	78.9 (76.1-81.4) (1692)	76.5 (71.9-80.6) (770)	81.3 (77.6-84.5) (920)
Susceptibility (among never smokers)			
Susceptible to tobacco use	7.4 (5.6-9.7) (1101)	9.6 (6.6-13.7) (403)	5.8 (3.9-8.7) (696)
Who thought they might enjoy smoking a cigarette	4.3 (2.9-6.5) (1096)	7.0 (4.5-10.7) (394)	2.5 (1.4-4.4) (700)

CI: Confidence interval, n: Sample size

Initiation of tobacco smoking, access, and purchasing pattern

The majority of ever smokers (39.6%; 95% CI: 33.1%–46.4%) initiated cigarette smoking between the age of 12 and 13 years [Table 2]. Over half the students smoked more than one cigarette a day. Girls smoked fewer cigarettes than boys. Two-thirds (67.4%; 95% CI: 58.5%–75.3%) of current smokers purchased cigarettes from stores, small groceries, stalls, flea markets, or convenience stores. Importantly, nearly half (44.0%; 95% CI: 31.7%–57.1%) of them faced no difficulty in buying cigarettes because they were underage. One in five current cigarette smokers purchased loose cigarettes as individual sticks and another 19% bought cigarettes in a divided packet [Table 2].

Smoking cessation

Four out of five current smokers (79.4%; 95% CI: 70.0%–86.3%) had tried to quit smoking in the past 12 months. In addition, nearly three-fourths (72.2%; 95% CI: 59.8%–81.9%) wanted to stop smoking. However, only 29.3% (95% CI: 22.5%–37.2%) had received help or advice to stop smoking [Table 2].

Exposure to pro-tobacco advertising

Thai students are frequently exposed to pro-tobacco marketing from different channels [Table 3]. Nearly,

three-fourths of students (72.6%; 95% CI: 69.0%–75.9%) had seen someone using tobacco on television, videos, or movies. About one-third of students (30.9%; 95% CI: 27.4%–34.6%) noticed tobacco advertisements at points of sale. Nearly, two out of five students (38.1%; 95% CI: 33.5%–42.8%) noticed advertisements of cigarettes or other tobacco products, and over one-fourth of students (27.0; 95% CI: 23.7%–30.6%) noticed electronic cigarette advertisements on the internet or other online media. In all, 10.5% (95% CI: 8.8%–12.4%) students owned something with a tobacco logo on it and 7.3% (95% CI: 5.3%–9.9%) were offered a free tobacco product from a tobacco company representative.

Exposure to anti-tobacco messages

Three-fourths of the students (74.9%; 95% CI: 70.6%–78.7%) saw or heard anti-tobacco messages in the media such as television, radio, internet, billboards, posters, newspapers, magazines, or movies. The majority of the students mentioned that they were taught about the dangers of tobacco use in their school.

Knowledge and attitudes toward tobacco

The majority of students thought that other people's smoking was harmful to them and was in favor of a ban

Table 2: Characteristics of cigarette smokers aged 13-15 years, Global Youth Tobacco Survey, Thailand, 2015

Indicators	Percentage (95% CI) (n)		
	Overall	Boys	Girls
Initiation age of tobacco smoking (years)			
7 years old or younger	5.2 (2.8-9.6) (436)	5.5 (2.9-10.2) (287)	4.5 (1.8-10.8) (149)
8 or 9 years old	9.3 (6.1-13.9) (436)	11.2 (7.3-16.9) (287)	4.7 (1.8-11.4) (149)
10 or 11 years old	21.2 (17.0-26.1) (436)	23.4 (18.0-29.8) (287)	16.1 (11.1-22.9) (149)
12 or 13 years old	39.6 (33.1-46.4) (436)	39.0 (31.1-47.6) (287)	40.8 (31.1-51.3) (149)
14 or 15 years old	24.8 (21.3-28.6) (436)	20.8 (16.2-26.3) (287)	33.9 (25.9-42.8) (149)
Smoking pattern (among current cigarette smokers)			
Who smoke 2-5 cigarettes/day	37.5 (29.1-46.8) (179)	38.1 (29.5-47.4) (131)	35.7 (18.1-58.1) (48)
Who smoke 1 cigarette/day	30.0 (22.1-39.2) (179)	30.0 (21.8-39.8) (131)	29.7 (13.7-52.7) (48)
Access and availability			
Stores, small groceries, stalls, flea markets, or convenience stores	67.4 (58.5-75.3) (135)	68.0 (56.2-78.0) (93)	65.7 (51.3-77.7) (42)
Store or small groceries	54.4 (46.5-62.0) (135)	52.2 (42.3-62.0) (93)	60.3 (45.0-73.9) (42)
Not refused because of their age	44.0 (31.7-57.1) (119)	40.8 (26.2-57.3) (84)	53.5 (37.3-69.0) (35)
Purchased in a pack (20 cigarettes)	54.7 (45.0-64.0) (132)	56.0 (44.9-66.5) (92)	51.0 (28.6-72.9) (40)
Purchased in individual sticks	19.6 (12.7-29.1) (132)	19.6 (12.3-29.8) (92)	19.6 (9.3-36.6) (40)
Purchased in a small cigarette pack	19.1 (12.2-28.5) (132)	16.8 (9.1-28.9) (92)	25.5 (14.3-41.2) (40)
Smoking cessation			
Tried to stop smoking	79.4 (70.0-86.3) (114)	80.4 (65.9-89.7) (80)	76.4 (34)*
Want to stop smoking	72.2 (59.8-81.9) (115)	74.4 (57.8-86.1) (86)	65.5 (29)*
Thought they would be able to stop	81.1 (65.6-90.6) (124)	80.9 (63.3-91.2) (81)	81.5 (52.3-94.6) (43)
Received help/advice to stop smoking	29.3 (22.5-37.2) (135)	28.8 (22.0-36.8) (89)	30.5 (19.3-44.5) (46)
Knowledge and attitudes			
Thought smoking tobacco helps people feel more comfortable at social gatherings	27.7 (25.6-29.8) (1698)	30.4 (26.2-34.9) (777)	24.9 (21.4-28.8) (921)
Thought it is difficult to quit once someone starts smoking tobacco	16.6 (14.6-18.9) (1691)	15.5 (12.4-19.4) (771)	17.7 (15.5-20.2) (920)

*CI not calculated because <35 cases. CI: Confidence interval, n: Sample size

Table 3: Exposure to pro- and anti-tobacco advertising among students aged 13-15 years, by gender, Global Youth Tobacco Survey, Thailand, 2015

Indicators	Percentage (95% CI) (n)		
	Overall	Boys	Girls
Pro-tobacco advertisements			
Noticed on television, video, or movies (among all students)	72.6 (69.0-75.9) (1697)	69.8 (64.8-74.4) (781)	75.5 (72.4-78.4) (916)
Noticed on television, video, or movies (among those who watched)	77.4 (74.3-80.3) (1629)	76.2 (72.2-79.8) (713)	78.7 (75.4-81.6) (916)
Noticed at points of sale (among all students)	30.9 (27.4-34.6) (1711)	31.6 (26.2-37.5) (787)	30.1 (26.5-33.8) (924)
Noticed at points of sale (among those who visited)	35.5 (31.2-40.0) (1489)	37.5 (30.8-44.7) (664)	33.5 (29.4-37.8) (825)
Noticed advertisement of cigarettes on the internet or other online media	38.1 (33.5-42.8) (1712)	37.9 (31.2-45.0) (787)	38.3 (32.5-44.3) (925)
Noticed electronic cigarette advertisements on the internet or other online media	27.0 (23.7-30.6) (1704)	31.5 (27.1-36.3) (782)	22.4 (17.5-28.2) (922)
Offered a free tobacco product from a tobacco company representative	7.3 (5.3-9.9) (1695)	10.2 (7.3-14.1) (776)	4.2 (2.6-6.8) (919)
Possessed object with tobacco logo	10.5 (8.8-12.4) (1675)	13.4 (11.0-16.2) (763)	7.4 (6.0-9.2) (912)
Anti-tobacco messages			
Noticed in the media	74.9 (70.6-78.7) (1701)	69.8 (64.3-74.8) (777)	80.1 (76.3-83.4) (924)
Noticed at sports/community events (among all students)	44.1 (39.9-48.5) (1703)	40.7 (35.3-46.3) (786)	47.8 (43.5-52.2) (917)
Noticed at sports/community events (among those who attended events)	72.2 (68.1-75.9) (1054)	74.1 (68.9-78.6) (430)	70.5 (65.9-74.7) (624)
Thoughts about quitting smoking because of a warning label	38.4 (32.4-44.9) (202)	38.9 (31.2-47.2) (143)	37.1 (26.9-48.5) (59)
Taught in school about dangers of tobacco	76.2 (72.1-79.9) (1715)	72.5 (67.7-76.9) (789)	80.1 (75.4-84.1) (926)

CI: Confidence interval, n: Sample size

on smoking. However, in contrast, more than one-fourth (27.7%; 95% CI: 25.6%–29.9%) of the students felt that

smoking tobacco helps people feel more comfortable at celebrations, parties, and social gatherings, and 16.6%

(95% CI: 14.6%–18.9%) of students thought that it would be difficult to quit once someone started smoking tobacco [Table 2].

Factors associated with smoking

Tobacco use increased with age and almost was 3 times higher in boys than in girls [Table 4]. Students who were offered a free tobacco product by a company representative were significantly more likely to use tobacco than those who were not (54.5% vs. 11.5%; AOR = 5.0, 95% CI: 3.7–6.9). Other factors associated with higher odds of

using tobacco were possessing an object with a tobacco logo on it and exposure to SHS. On the other hand, learning about the harms of tobacco use at school and exposure to anti-tobacco messages in the media protected youth from smoking.

DISCUSSION

We found that tobacco use remains high among Thai youth, with one out of six students currently using tobacco. As shown

Table 4: Factors associated with tobacco use by univariate and multivariable logistic regression analyses among students aged 13-15 years, Global Youth Tobacco Survey, Thailand, 2015

Factors	Tobacco use		Crude OR (95% CI)	Adjusted OR (95% CI)	P
	Yes, n (%)	No, n (%)			
Age (years)					
13	57 (10.1)	486 (89.9)	1	1	0.1124
14	98 (14.6)	630 (85.4)	1.5 (0.9-2.6)	1.4 (0.8-2.4)	
15	79 (22.5)	280 (77.5)	2.6 (1.2-5.9)	2.5 (1.0-6.1)	
Gender					
Female	73 (8.1)	813 (91.3)	1	1	0.0003
Male	161 (1.8)	581 (78.2)	3.2 (2.0-4.9)	2.9 (1.8-4.8)	
Parents/guardian smoked					
None	141 (5.9)	771 (84.1)	1	1	0.0967
One parent	84 (13.2)	599 (86.9)	0.8 (0.6-1.1)	0.8 (0.5-1.1)	
Both parents	9 (28.4)	26 (71.7)	2.1 (0.6-7.5)	2.0 (0.7-6.0)	
Exposed to secondhand smoke					
No	69 (10.3)	643 (89.7)	1	1	0.0001
Yes	165 (18.9)	744 (81.1)	2.1 (1.5-2.9)	2.8 (1.8-4.1)	
Had an object with a cigarette brand or logo					
No	163 (12.1)	1268 (87.9)	1	1	0.0158
Yes	55 (35.7)	104 (64.3)	3.8 (2.3-6.3)	2.2 (1.2-3.9)	
Exposed to advertisement of cigarettes or other tobacco products on the internet					
No	120 (12.4)	890 (87.6)	1	1	0.0823
Yes	113 (19.3)	502 (80.7)	1.7 (1.2-2.4)	1.4 (1.0-2.0)	
Exposed to point-of-sale tobacco advertisement					
No	131 (12.3)	1011 (87.7)	1	1	0.0723
Yes	97 (20.2)	385 (79.8)	1.7 (1.1-2.6)	1.5 (1.0-2.2)	
Offered a free tobacco product by a tobacco company					
No	165 (11.5)	1332 (88.5)	1	1	<0.0001
Yes	58 (54.5)	52 (45.6)	8.7 (6.5-11.6)	5.0 (3.7-6.9)	
Exposed to anti-tobacco messages in media					
No	69 (18.3)	329 (81.7)	1	1	0.0147
Yes	155 (13.2)	1061 (86.8)	0.6 (0.4-0.9)	0.6 (0.4-0.9)	
Learned about dangers of tobacco at school					
No/I don't know	74 (20.2)	302 (79.8)	1	1	0.0149
Yes	158 (13.3)	1093 (86.7)	0.6 (0.4-0.8)	0.7 (0.5-0.9)	
Believe that people's smoking is harmful to them					
Probably or definitely not	39 (30.2)	92 (69.8)	1	1	0.0993
Definitely or probably yes	192 (13.4)	1302 (86.6)	0.4 (0.2-0.6)	0.6 (0.3-1.1)	
Perception that smoking makes people more comfortable at social gatherings					
Less comfortable/no difference whether smoking or not	145 (12.8)	1027 (87.2)	1	1	0.1079
More comfortable	85 (20.8)	352 (79.2)	1.8 (1.2-2.7)	1.4 (0.9-2.3)	

OR: Odds ratio, CI: Confidence interval

in previous surveys, boys were significantly more likely to use tobacco than girls. The overall prevalence of tobacco use and current cigarette smoking has not declined since the previous GYTS in 2009.^[13] Newer products such as electronic cigarettes, which were assessed for the first time in this survey, are also being used by the youth. Cigarette smoking, the predominant form of tobacco use, has remained unchanged at 11% since the previous two rounds.^[9,13] Of concern is the fact that there was an increase in cigarette smoking among girls, from 3.8% in 2009 to 5.2% in this round.

Tobacco use is much higher in Thai schoolchildren compared to their peers in India, Myanmar, Nepal, and Sri Lanka.^[14] Thailand has been an example of progressive tobacco control policies and legislations. Yet, cigarette smoking among Thai youth remains high and has not declined in the past decade. There may be several explanations for this. First, cigarettes, particularly “roll your own” cigarettes are inexpensive and affordable in Thailand. Moreover, cigarettes are sold as single sticks or divided packets, which makes it even more easy for students to purchase them. Sale of single cigarettes is a risk factor for smoking among youth. In Malaysia, more than half of the male students surveyed reported that they bought cigarettes as single sticks or in divided packets, and 82% of these students used their school pocket money to purchase cigarettes.^[15] Tobacco use among the youth is price-sensitive. Nearly, 40% of students in our study bought single sticks or divided packets, indicating that the price of the cigarettes mattered to them. Second, cigarettes are easily available to the youth at various grocery stores and convenience stores where they are sold illegally to underage children. Despite laws that ban the sale of tobacco products to minors, 67.4% of current smokers could easily buy tobacco products, showing a continuing upward trend, from 38.1% in 2005 to 47.9% in 2009. The proportion of current smokers who were not prevented from buying cigarettes despite being underage also increased from the last two rounds of GYTS; 28.3% in 2005, 38.3% in 2009, and 44.0% in 2015. These data indicate weak enforcement of existing laws and are a major contributor to the continuing high rate of smoking among the youth. Finally, indirect tobacco advertisements and promotion by the tobacco industry are undermining tobacco control in Thailand. In our study, students who were offered a free product by a tobacco company representative were five times more likely to use tobacco than those who were not. Furthermore, students who owned an object with a tobacco logo were more likely to use tobacco. Furthermore, we found that a significant proportion of Thai students is being exposed to pro-smoking media campaigns and tobacco marketing as well as to “point-of-sale” advertisements. These data indicate an urgent need to “de-normalize” tobacco use in society.

The new Tobacco Product Control Act, which was recently passed on March 3, 2017, includes a number of provisions to address some of the above challenges that are undermining tobacco control in Thailand. These include increase in the minimum age of purchase of cigarettes from 18 to 20 years; ban on sale of single cigarettes or divided packets; provision

for standard packaging; total ban on advertising, including total ban on display of tobacco product at point of sale; expansion of the scope of definition of tobacco to include e-cigarettes and water pipes; and stricter penalties for noncompliance with the law.

Our survey also shows a number of areas where progress has been made since the previous GYTS. There has been a significant increase in the proportion of children learning about the harms of tobacco use in school from 59.6% in 2009 to 76.2% in this survey. Furthermore, three-quarters of the students reported noticing anti-tobacco messages in the media. Our multivariable analysis shows that learning about dangers of tobacco in school and exposure to anti-tobacco measures in the media protected the youth from smoking. These positive changes may have resulted from the implementation of a number of school-based interventions and policies by the ministries of health and education, along with non-governmental organizations such as ASH Thailand and Thai Health. Furthermore, these agencies have been running hard-hitting anti-tobacco media campaigns. Another positive finding was that exposure to SHS at home or inside any enclosed public place dropped dramatically from 67.6% in 2009 to 38.6% in 2015. Exposure to tobacco smoke at any outdoor public place, which was reported for the first time in this survey, was also similarly low at 37.7%. These findings reflect the impact of the government’s 2010 policy of a total ban on smoking in all public places (including a total ban in schools).

Study limitations and strengths

Our study should be interpreted in the light of at least two limitations. First, the survey questionnaire was self-administered; therefore, the results reflect self-reported data. It is possible that students may have under- or over-reported their behaviors or attitudes. Although we were not able to validate the responses during this survey, studies conducted elsewhere indicate good reliability of the methods.^[16] Second, because GYTS is limited to youth attending school only, it may not be representative of all adolescents aged 13–15 years. However, as only a small proportion of Thai youth are out of school at this age, this may not affect the results significantly. Moreover, student response rates were very high, suggesting that bias attributable to absence or nonresponse would be minimal.

Despite these limitations, the survey provides valuable information on a wide range of potential determinants of cigarette smoking among Thai youth and is an important tool for identifying areas that need to be strengthened further. This is a nationally representative survey with a high student response rate that used a robust internationally standardized methodology. The questionnaire and methodology used in this survey were similar to those used in the previous rounds, allowing comparison of findings over time.

CONCLUSION

The third round of Thailand’s GYTS provides evidence of continuing high use of conventional tobacco products among

Thai youth and the emerging use of electronic cigarettes among youth for the first time. With the recent passage of the landmark new Tobacco Product Control Act, it is an opportune time to step up actions to curb tobacco use among the youth. While the new legislation includes a number of measures to protect youth from smoking, it will be effective only if it is enforced strongly. It is critical to strengthen mechanisms of law enforcement in Bangkok as well as in the provinces, and closely monitor adherence to and compliance with the law. Stringent law enforcement together with improved tax measures and periodic monitoring using GYTS should go a long way in preventing smoking initiation by Thai youth – the key to stopping the tobacco epidemic.

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Conflicts of interest

There are no conflicts of interest.

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