Trends in Tobacco Use among Thai Adolescents

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Background: *Tobacco use continues to be the leading global cause of preventable death. Understanding the trends in prevalence of cigarette smoking and smoking behaviors among adolescents enables physicians to target prevention resources more effectively.*
Objective: *The objectives of this study were to monitor the prevalence of smoking, to compare the prevalence of smoking in subgroups of region, gender and age, and to explore smoking behavior among adolescent smokers.*
Material and Method: *The International Tobacco Control Survey-Thailand is a population-based, national representative, longitudinal survey conducted among adolescents between the ages of 13-17. Adolescents were sampled from Bangkok and 4 regions of Thailand using stratified multistage sampling. Three surveys were conducted during January 2005 to March 2008. Respondents were asked to complete self-administered questionnaires. Data was analyzed using descriptive statistics.*
Results: *Overall, smoking prevalence has increased from 12.0% in wave 1 to 14.3% in wave 2 and 18.3% in wave 3. Smoking prevalence in males was more than 10 times higher than females. Manufactured cigarettes were most frequently used by adolescents. More than 70% of smokers reported that they smoked manufactured cigarettes. Total amount of tobacco use per day increased from wave 1 to wave 3. The proportion of smokers who reported that they bought cigarettes by themselves increased during the follow-up waves (38.3%, 60.9%, 68.2% respectively). More than 20% of smokers reported that they never plan to quit smoking.*
Conclusion: *Smoking prevalence among thai adolescents was apparently increased.*

Keywords: *Prevalence, Smoking, Youth, Thailand*

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Tobacco use continues to be the leading global cause of preventable death. It kills nearly 6 million people and causes hundreds of billions of dollars of economic damage worldwide each year. Most of these deaths occur in low- and middle-income countries and this disparity is expected to widen further over the next several decades[1]. Tobacco use by adolescents remains a major public health concern worldwide especially in Southeast Asia. Thailand is widely seen as a global leader in tobacco control and thus the tobacco-control policies and programs that are implemented in Thailand are of considerable interest and importance throughout the world. As a result of the strong tobacco control policies, the prevalence of adult smoking (15 years and older) has declined since 1976. The surveys conducted by the National Statistical Office (NSO) found that in 1991 the prevalence of current smoking among adults was 32.0%, slowly declining to 26.5% in 2001. The survey in 2006 found that 21.9% of Thais aged 15 and older were smokers[2]. However, smoking prevalence among Thai adolescents has gradually increased. The Thai NSO reported the prevalence of regular smoker among adolescents age 15 to 19 has gradually increased from 5.5% in 2004 to 6.2% in 2007[3,4]. The recent survey conducted by Global youth Tobacco Survey (GYTS) in 2009 showed that 11.7% of students aged 13-15 years old currently smoke cigarettes (Boy = 17.4%, Girl = 4.8%)[5]. Few cross-sectional surveys have been done to study smoking behaviors among Thai students[3-5]. However, population-based, national representative, longitudinal studies focused on this issue are considerably lacking in Thailand. Understanding the trends in prevalence of cigarette smoking and smoking behaviors among adolescents enables physicians and policy makers to target prevention resources more effectively.

Therefore, the objectives of the present study are; 1) To monitor the prevalence of smoking among Thai adolescents, 2) To compare the prevalence of smoking in each subgroup (region, gender, age), and 3)

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To explore smoking behaviors among adolescent smokers from 2005-2008.

Material and Method

The data presented in the study is derived from the International Tobacco Control Survey-Thailand (ITC-Thailand). The ITC-Thailand is a population based, national representative, longitudinal survey conducted annually. This current study used data from wave 1 to wave 3 surveys. Wave 1 survey, conducted during January to March 2005, involved 1,000 respondents; wave 2 survey, conducted during July to September 2006, involved 927 respondents; and wave 3 survey, conducted during January to March 2008, involved 1,096 respondents. Respondents were Thai adolescents between the ages of 13-17, selected using a stratified multi-stage sampling method. The primary strata consisted of Bangkok and 4 regions (North, Northeast, Central and South). In each region, 2 provinces were selected, Chiang Mai and Phrae from the North; Nakhon Rachasima and Nong Khai from the Northeast; Samut Sakhon and Nakhon Pathom from the Central region; Nakhon Si Thammarat and Songkhla from the South. Provinces were secondary stratification into urban and rural districts. Subdistricts and communities were selected within urban and rural districts, with probability proportional to population size. Households were selected using enumeration followed by simple random sampling. Only 1 respondent was randomly selected from each household. A 30-minute self-administered questionnaire was used for data collection.

Measures

The self-administered questionnaire included measures of demographic characteristics, smoking status and smoking behaviors.

Demographic characteristics

Respondents reported their age and sex. Regions and residential area were obtained from the household enumeration.

Smoking status

Smoking status was assessed by asking two questions. The first question, "How many cigarettes have you smoked in your life?" is to determine lifetime smoking prevalence. The other question, "Think about the last 30 days. How often did you smoke?" is to determine the prevalence of smoking. For this analysis, a smoker was defined as smoking cigarettes at least 1 day during the 30 days before the survey; a current smoker was defined as smoking cigarettes at least 1 day during the 30 days before the survey and having smoked more than 100 cigarettes in their lifetime; an experimental smoker was defined as smoking cigarettes at least 1 day during the 30 days before the survey and having smoked 1-100 cigarettes in their lifetime; a former smoker was defined as smoked at least one cigarette in their lifetime but not smoking during the 30 days before the survey; non smoker was defined as never smoke cigarette in their lifetime.

Smoking behaviors

Respondents who smoked cigarettes at least 1 day during the 30 days before the survey were asked about their smoking behaviors. For this analysis, the measurements included type of cigarettes used, total amount of cigarettes used per day, source of cigarettes and planning to quit smoking. Type of cigarettes used was assessed by asking: "What brand of cigarettes do you usually smoke?"; total amount of cigarettes used per day was assessed by asking "During the past week, on the days that you smoked, how many cigarettes did you smoke each day?"; source of cigarettes was assessed by asking: "How do you usually get your cigarettes?"; and planning to quit smoking was assessed by asking: "Which of the following describes your thoughts about quitting smoking?".

Statistical analysis

Data was analyzed and compared using descriptive statistics.

Results

Sample characteristics

Table 1 includes sample characteristics for respondents in wave 1 to wave 3 surveys.

In all waves, mean age of respondents were approximately 14.7 years-old and the proportion of males was similar to females. The sample was designed to be representative at the regional level and for rural and urban areas. The highest proportion of respondents was from the Northeast, followed by Central, North, South and Bangkok. More than 60% of respondents lived in rural areas.

Smoking status

In wave 1 survey, only 3.8% of adolescents were current smokers compared with 5.9% in wave 2 and 8.2% in wave 3 survey. The prevalence of experimental smokers were 8.2% in wave 1 survey, gradually increased to 8.4% in wave 2 and 10.1% in

Table 1. Demographic characteristics by survey wave

Demographic Characteristics	Wave 1 (2005) % (n)	Wave 2 (2006) % (n)	Wave 3 (2008) % (n)
Age			
13	22.70 (227)	23.80 (221)	24.50 (268)
14	24.30 (243)	25.80 (239)	25.70 (282)
15	22.60 (226)	21.70 (201)	20.60 (226)
16	15.30 (153)	16.90 (157)	13.90 (152)
17	15.10 (151)	11.80 (109)	15.30 (168)
Mean age (SD)	14.76 (1.36)	14.67 (1.32)	14.70 (1.40)
Gender			
Female	48.40 (484)	47.60 (441)	46.90 (514)
Male	51.60 (516)	52.40 (486)	53.10 (582)
Region			
Bangkok	10.40 (104)	10.40 (96)	9.90 (108)
Central	23.20 (232)	25.60 (237)	22.90 (251)
North	18.40 (128)	19.10 (177)	19.90 (218)
Northeast	35.20 (352)	34.10 (316)	31.80 (348)
South	12.80 (128)	10.90 (101)	15.60 (171)
Residential area			
Urban	30.40 (304)	35.10 (325)	36.50 (400)
Rural	69.60 (696)	64.90 (602)	63.50 (696)
Smoking status			
Never smoker	83.80 (838)	78.70 (730)	81.00 (888)
Experimental smoker	8.20 (82)	8.40 (78)	10.10 (111)
Current smoker	3.80 (38)	5.90 (55)	8.20 (90)
Former smoker	4.20 (42)	6.90 (64)	0.60 (7)

wave 3 survey.

Prevalence of smoking

Fig. 1 to 3 show the prevalence of smoking by subgroup of adolescents. Overall, the prevalence of smoking increased from 12.0% in wave 1 to 14.3% in wave 2 and 18.3% in wave 3.

Region

The findings in the present study show some differences in prevalence of smoking across the five regions of Thailand (Fig. 1). Prevalence of smoking was consistently highest among adolescents living in Bangkok. Prevalence of smoking slightly declined from 29.8% in wave 1 to 22.9% in wave 2 and increased to 27.8% in wave 3. The South showed the greatest increase in smoking prevalence compared to other regions. The rate of smoking rapidly increased from 6.3% in wave 1 to 14.9% in wave 2 and 21.6% in wave 3. Trends in prevalence of smoking in the Central region was close to the rate observed in the North and Northeast. In these three regions, the rate of smoking gradually increased during the survey waves.

Gender

There was a great difference in prevalence of smoking among males and females. Prevalence of males smoking was more than 10 times higher than that of females in all survey waves (Fig. 2).

Age

For this analysis, prevalence of smoking increased with age. The older adolescents were more likely to report smoking than the younger adolescents. The largest increase in smoking occurred between ages 16 and 17 in wave 1 and wave 2 surveys and between 15 and 16 years-old in wave 3 survey. Prevalence of smoking was approximately 30% among 17 year-old adolescents. From wave 1 to wave 3, the prevalence of smoking increased in every age group (Fig. 3).

Smoking behaviors

Table 2 shows smoking behaviors by survey wave.

Mean age when first smoked whole cigarette

3 among smokers, mean age when first smoked

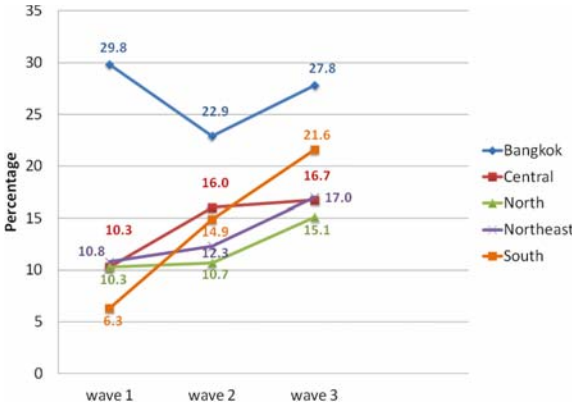

Fig. 1 Prevalence of smoking by region

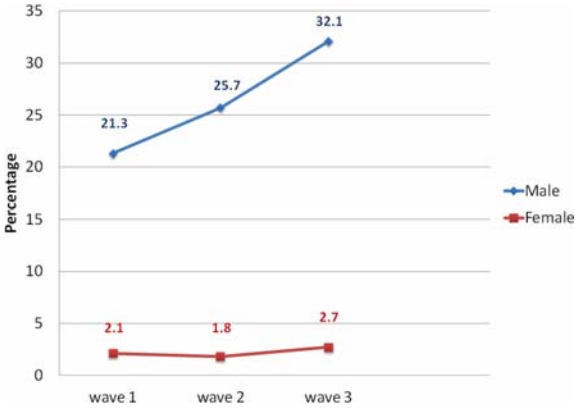

Fig. 2 Prevalence of smoking by gender

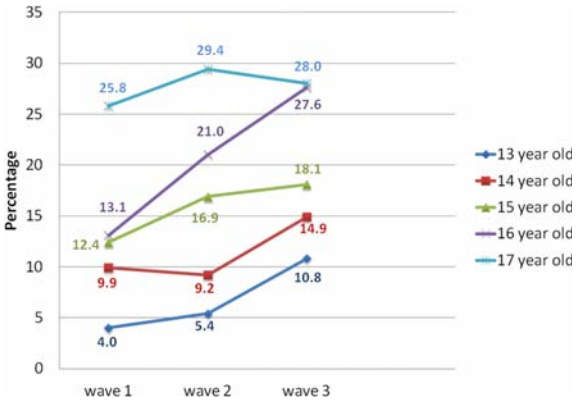

Fig. 3 Prevalence of smoking by age

whole cigarette was approximately 14 years old and slightly increased from wave 1 to wave 3.

Type of cigarettes use

Type of cigarettes use was unchanged between the survey waves. Approximately 70% of smokers reported that manufactured cigarettes were their usual brand. Smoking of hand-rolled cigarette slightly decreased from 8.0% in wave 1 to 7.8% in wave 2 and 5.7% in wave 3.

Total amount of tobacco use per day

In all waves, the majority of smokers reported they smoked 2-10 cigarettes per day. Amount of cigarette use per day tended to increase during the surveys. The proportion of smokers who reported they smoked one or less cigarettes per day slightly declined; furthermore, the proportion of smokers who reported they smoked more than 20 cigarettes per day increased remarkably. In wave 1, no one reported they smoked more than 20 cigarettes per day, but in the follow-up waves 7% of smokers reported they smoked more than 20 cigarettes per day.

Sources of cigarettes

In wave 1, approximately half of smokers reported that they obtained cigarettes from friends; only 38.3% reported that they bought cigarette for themselves. The proportion of smokers who reported that they bought cigarettes for themselves increased to 60.9% in wave 2 and 68.2% in wave 3.

Plan to quit smoking

Most smokers planned to quit smoking within 1 month; however, this report tended to decrease during the follow-up waves (41.7% in wave 1, 40.6% in wave 2, 33.3% in wave 3). It is a concern that more than 20% of smokers did not plan to quit smoking.

Discussion

Unlike cigarette smoking trends for adults[6], which generally declined, smoking trends for adolescents gradually increased from 2005 to 2008[1]. Compared with other countries in Southeast Asia, tobacco use in Thailand is similarly increasing as in Indonesia but contrasts with the gradual decline in Malaysia and Vietnam. The prevalence of smoking among Malaysian adolescents was about 30% in 2002 and subsequently declined to less than 25% in 2006. In Vietnam, smoking prevalence was 31.6% in 2001 compared with 25% in 2008[7].

Comparison between regions shows that smoking prevalence was highest among adolescents lived in Bangkok, the capital city of Thailand. A previous study done in six Western European countries (Sweden, Finland, Denmark, Germany, Italy and Spain) found that smoking prevalence was highest in urban areas and

Table 2. Smoking behaviors by survey wave

Smoking behaviors	Wave 1 (2005) % (n)	Wave 2 (2006) % (n)	Wave 3 (2008) % (n)
Mean age when first smoked whole cigarette (SD)	13.85 (1.59)	14.65 (1.61)	14.87 (1.82)
Product use			
Manufactured	70.8 (80)	78.9 (101)	76.2 (147)
Hand-rolled	8.0 (9)	7.8 (10)	5.7 (11)
No usual brand	21.2 (24)	13.3 (17)	18.1 (35)
Frequency of smoking in last week			
< 1 cigarette	17.0 (16)	9.0 (11)	11.2 (21)
1 cigarette	13.8 (13)	8.1 (10)	9.0 (17)
2-10 cigarettes	58.5 (55)	71.5 (88)	62.8 (118)
11-20 cigarettes	10.6 (10)	4.9 (6)	10.1 (19)
> 20 cigarettes	0.0 (0)	6.5 (8)	6.9 (13)
Sources of cigarettes			
I buy them	38.3 (46)	60.9 (81)	68.2 (137)
Someone buys for me	10.0 (12)	7.5 (10)	6.5 (13)
From friends	47.5 (57)	29.3 (39)	21.9 (44)
From home	3.3 (4)	1.5 (2)	3.0 (6)
Another way	0.9 (1)	0.9 (1)	0.4 (1)
Plan to quit smoking			
Within 1 month	41.7 (50)	40.6 (54)	33.3 (61)
Within the next 6 months	9.2 (11)	19.5 (26)	24.0 (44)
Later than 6 months	20.8 (25)	14.3 (19)	19.1 (35)
Never plan to quit	28.3 (34)	25.6 (34)	23.5 (43)

increased with urbanization[8]. The most striking regional difference in trends of cigarette smoking was in the Southern region, in which a rapid rise in smoking prevalence was observed during the past few years. There was no definite explanation; however, socio-cultural and political issues might pay a role in this result.

Consistent with previous studies, trends in smoking prevalence among males are higher than in female[3-5]. Adolescent beliefs about the social acceptability of smoking are different between genders and might have an impact on smoking behaviors. Parkinson et al studied smoking beliefs among Thai youth and found that males were more likely than females to hold positive beliefs about the social acceptability of smoking. Moreover, males held more positive beliefs about the aesthetics of smoking compared to females[9].

Since 1992, Thailand has banned selling of cigarettes to persons under 18 years old. However, the present study shows that the proportion of smokers who bought cigarettes by themselves was rising while the proportion of smokers who acquired cigarettes from friends or other people was declining. In addition, the amount of cigarettes used per day among adolescent smokers was also increasing. These findings imply that the law should be more strictly enforced.

Current clinical practice recommendations from the American Academy of Pediatrics[10] focus on the essential role of health care providers as agents in smoking prevention and cessation and outline a 5-step approach for reducing smoking among patients. However, previous researches reported low rates of adolescent reported physician tobacco counseling. Alfano et al, showed that 42.1% of American adolescents reported ever being told by their physician not to smoke[11]. Our previous study found that only 32.2% of Thai adolescents reported that physician talked to them about the dangers of smoking[12]. This current study found that more than 20% of adolescent smokers never planned to quit smoking. Physicians can play an important role by ask and advise, cultivating a negative attitude towards smoking, educating them about the dangers of smoking and assisting them to quit smoking.

The present study had limitation that should be noted. The definition of smoking in the present study is adolescents self-reported. However, a recent national

study of adolescents found that smoking prevalence estimates derived from self-reports were only 1.3% lower than those derived from salivary cotinine levels, suggesting that self-reports for adolescents remain a valid measure for assessing smoking status[13].

Conclusion

The present study demonstrates that smoking prevalence among Thai adolescents has apparently increased. Additional interventions in males and the regions with large numbers of smokers may help further reduce the overall smoking prevalence.

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Potential conflicts of interest

None.

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แนวโน้มการบริโภคยาสูบของวัยรุ่นไทย

ทวิมา ศิริรัศมี, บุปผา ศิริรัศมี

***ภูมิหลัง**: การสูบบุหรี่เป็นสาเหตุหลักของการตายที่สามารถป้องกันได้ การศึกษาแนวโน้มของความชุก และพฤติกรรมการสูบบุหรี่ของวัยรุ่นจะช่วยให้แพทย์ใช้ทรัพยากรในการป้องกันในกลุ่มเป้าหมายอย่างมีประสิทธิภาพ*

***วัตถุประสงค์**: 1) เพื่อติดตามความชุกของการสูบบุหรี่ของวัยรุ่น 2) เพื่อเปรียบเทียบความชุกของการสูบบุหรี่ของวัยรุ่นจำแนกตามอายุ เพศ และภูมิภาค 3) เพื่อศึกษาพฤติกรรมการสูบบุหรี่ของวัยรุ่น*

***วัสดุและวิธีการ**: การศึกษาครั้งนี้เป็นการสำรวจแบบระยะยาว (longitudinal study) ซึ่งเก็บรวบรวมข้อมูลจากโครงการสำรวจนโยบายควบคุมการบริโภคยาสูบรอบที่ 1 รอบที่ 2 และรอบที่ 3 กลุ่มตัวอย่างคือ วัยรุ่นอายุ 13-17 ปี ที่ได้จากการสุ่มตัวอย่างแบบหลายขั้นตอน (stratified multistage sampling) โดยแบ่งเป็นเขตกรุงเทพฯและ 4 ภาค ได้แก่ ภาคเหนือ ภาคตะวันออกเฉียงเหนือ ภาคกลางและภาคใต้ กลุ่มตัวอย่างจะตอบแบบสอบถาม แบบให้ตอบด้วยตัวเอง การวิเคราะห์ข้อมูลใช้ค่าความถี่ ร้อยละ และส่วนเบี่ยงเบนมาตรฐาน*

***ผลการศึกษา**: ความชุกของการสูบบุหรี่ของวัยรุ่นเพิ่มขึ้นจากร้อยละ 12.0 ในการสำรวจรอบที่ 1 เป็นร้อยละ 14.3 และร้อยละ 18.3 ในการสำรวจรอบที่ 2 และรอบที่ 3 ตามลำดับ ความชุกของการสูบบุหรี่ของวัยรุ่นชายสูงกว่าวัยรุ่นหญิงมากกว่า 10 เท่า เมื่อติดตามพฤติกรรมการสูบบุหรี่ พบว่าในการสำรวจทั้ง 3 รอบ วัยรุ่นที่สูบบุหรี่มากกว่าร้อยละ 70 สูบบุหรี่โรงงาน ปริมาณการสูบบุหรี่ต่อวันเพิ่มขึ้นในทุกรอบการสำรวจ สัดส่วนของวัยรุ่นที่ซื้อบุหรี่ด้วยตนเองเพิ่มขึ้นในทุกรอบการสำรวจ (ร้อยละ 38.3, ร้อยละ 60.9 และร้อยละ 68.2 ในการสำรวจรอบที่ 1 รอบที่ 2 และรอบที่ 3 ตามลำดับ) วัยรุ่นที่สูบบุหรี่มากกว่าร้อยละ 20 รายงานว่าตนเองไม่เคยคิดเลิกสูบบุหรี่*

***สรุป**: การบริโภคยาสูบในกลุ่มวัยรุ่นไทยมีแนวโน้มสูงขึ้น*