

Prevalence and determinants of tobacco use among school going adolescents in Cambodia and Vietnam: a cross-sectional study

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Abstract

Objective: To investigate the prevalence and correlates of tobacco use among school-going adolescents.

Methods: This cross-sectional study consisted of a secondary analysis of existing cross-sectional survey data from the Global School-based Health Survey from Cambodia and Vietnam in 2013, and comprised schoolchildren. Data was analysed using Stata 13.

Results: The study comprised 7,137 schoolchildren. The overall mean age was 15.5±1.4 years. Besides, 3,806(53.33%) were from Cambodia and 3,331(46.67%) from Vietnam. Overall, 279(5.1%) students reported currently using tobacco (smoking and/or smokeless), including 214(6.2%) boys and 65(1.6%) girls, and 127(3.6%) in Cambodia and 152(5.2%) in Vietnam. Current cigarette smoking was 239(4.5%) and smokeless tobacco use was 143(2.4%).

Conclusion: Tobacco use was found to be significantly high among schoolchildren in Cambodia and Vietnam.

Keywords: Tobacco use, Adolescents, Cambodia, Vietnam. (JPMA 67: 1024; 2017)

Introduction

Tobacco use has increased in the Association of Southeast Asian Nations (ASEAN) region, with a prevalence of adult smoking in men of 39.1% in Cambodia and 47.4% in Vietnam, respectively, and a prevalence of adult smokeless tobacco use in women of 12.5% and 2.3% in Cambodia and in Vietnam, respectively,¹ making ASEAN a big market and prime target for transnational tobacco companies to expand their market.² In adolescents (13-15 years) the prevalence of current tobacco use in Cambodia was 5.1% (7.2% in boys, 3.0% in girls) in 2003 and 6.3% (7.9% in boys and 5.0% in girls) in 2010, while 3.8% (6.5% in boys and 1.5% in girls) in 2007 in Vietnam.³ The average age of smoking initiation was 21.1 years in Cambodia and 19.8 years in Vietnam in 2011, being the oldest age to initiate smoking among ASEAN countries.¹ Also among adolescents, intentions to start smoking within the next year were the lowest within ASEAN, with 6.1% in 2011 in Cambodia, and 6.6% in 2007 in Vietnam.^{1,3} In Cambodia in 2015⁴ and in Vietnam in 2012⁵ tobacco control laws were ratified. There is a lack of more recent and contextual data on tobacco use among adolescents in Cambodia and Vietnam.

The prevalence of current tobacco use among adolescents in some of the other ASEAN countries ranged from 11.5% current smoking in 2012 in Malaysia,⁶ 12.7% (18.7% in boys and 6.0% in girls) in 2011 in Lao People's Democratic Republic (PDR), 13.7% (18.8% in boys and 9.3% in girls) in 2011 in the Philippines, 17.9% (26.9% in boys and 9.2% in girls) in 2009 in Thailand, and current tobacco use of 22.5% (41.1% in boys and 6.2% in girls) in 2009 in Indonesia.³ Sociodemographic factors and various risk factors have been identified to be associated with tobacco use among adolescents. Sociodemographic factors include being male,^{6,7} older age,⁸ and low social status.⁹ Risk factors may include early initiation of smoking, exposure to passive smoking,⁶ current alcohol drinking,^{6,10} illicit drug use,^{6,10} consumption of energetic and soft drinks,¹¹ eating fatty food and eating from fast food,¹² being overweight,¹³ having had sexual intercourse,¹⁰ being bullied,^{6,14} and psychological distress.^{7,10,14} The current study was planned to determine estimates of the prevalence and correlates of tobacco use among school adolescents in Cambodia and Vietnam using the most recent data (2013) available.

Subjects and Methods

This cross-sectional study consisted of a secondary analysis of existing cross-sectional survey data from the Global School-based Health Survey (GSHS) from Cambodia and Vietnam. Details and data of the GSHS can be accessed online.¹⁵ The year of data collection was 2013 in both Cambodia and Vietnam. A two-stage cluster sample design was used to collect data to

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represent all students in grades 6-10 in each country.¹⁵ At the first stage of sampling, schools were selected with probability proportional to their reported enrolment size.¹⁵ In the second stage, classes in the selected schools were randomly selected and all students in selected classes were eligible to participate irrespective of their actual ages.¹⁵ Students self-completed the questionnaire under the supervision of trained research assistants.¹⁵ To calculate the sample, prevalence estimation was 4%, sensitivity 0.1 and specificity 0.7, confidence 95% and desired precision of 0.05. Using EpiTools the sample size calculated for an assumed large (infinite) population was 6,592.

The study instruments used were from the GSHS¹⁵ (Table-1). Body weight and height were assessed by self-report. The international age- and gender-specific child body mass index (BMI), calculated as weight/height² (kg/m²), cut-points were used to define overweight and obesity.¹⁶ Adolescents were categorised as overweight or obese if their BMI was > +1 standard deviation (SD) and > +2 SD, respectively, from the median for BMI for age and

gender.¹⁶ Psychological distress was assessed with three items (no close friends, feeling often or always lonely, and suicidal ideation).

Data was analysed using STATA software version 13 (Stata Corporation, College Station, Texas, the United States). Associations between socio-demographics, risk behaviour and current tobacco use among schoolchildren were evaluated calculating prevalence ratios (PR). Poisson regression estimated the impact of independent variables on current tobacco use (binary dependent variable). Independent variables found significant ($p < 0.05$) in relation to the outcome variable in bivariate analysis were included in the final multivariate model. In the analysis, weighted percentages were reported. The reported sample size reflects the sample that was asked the target question. $P < 0.05$ indicated statistical significance. Both the p-value and the reported 95% confidence intervals were adjusted for the multistage stratified cluster sample design of the study.

Results

Of the 7,137 schoolchildren, 3,318(46.5%) were boys

Table-1: Variable description.

Variables	Question	Response options
Current smoking cigarettes	"During the past 30 days, on how many days did you smoke cigarettes?"	1=0 days to 7=All 30 days
Current other tobacco use	"During the past 30 days, on how many days did you use any other form of tobacco, such as chewing tobacco leaves?"	1=0 days to 7=all 30 days
Smoking initiation	"How old were you when you first tried a cigarette?"	1=I have never smoked cigarettes to 8=18 years old or older
Passive smoking	"During the past 7 days, on how many days have people smoked in your presence?"	1=0 days to 5=All 7 days
Hunger	"During the past 30 days, how often did you go hungry because there was not enough food in your home?"	1 = never to 5 = always
Height	"How tall are you without your shoes on?"	
Weight	"How much do you weigh without your shoes on?"	
Ever sex	"Have you ever had sexual intercourse?"	1=yes, 2=no
Current alcohol use	"During the past 30 days, on how many days did you have at least one drink containing alcohol?"	1=0 days to 7=All 30 days
Illicit drug use	"How old were you when you first used drugs (This includes using marijuana, amphetamines, cocaine, inhalants, methamphetamines (also called Yama or Yaba), and heroin)."	1=I have never used drugs to 8=18 years old or older
Soft drinks use	"During the past 30 days, how many times per day did you usually drink carbonated soft drinks, such as Coca Cola, Pepsi, Fanta, 7-Up, Sprite, Mirinda, or Sarsi? (Do not include diet soft drinks.)"	1=I did not drink carbonated soft drinks during the past 30 days to 7=5 or more times per day
Fast food	"During the past 7 days, on how many days did you eat food from a fast food restaurant, such as KFC, Pizza Company, Pizza World, Lucky Burgers, Lucky Seven, Master Grill, BBQ Chicken, Burger King, Saprino Pizza, Pizza Hand, or Mariyan Pizza House?"	1=0 days to 7=7 days
Bullied	"During the past 30 days, on how many days were you bullied?"	1 = 0 day to 7 = all 30 days
Psychological distress		
Close friends	"How many close friends do you have?"	1 = 0 to 4 = 3 or more
Lonely	"During the past 12 months, how often have you felt lonely?"	1=never to 5=always
Suicidal ideation	"During the past 12 months, did you ever seriously consider attempting suicide?"	1=yes, 2=no

KFC: Kentucky Fried Chicken

BBQ: Barbecue.

Table-2: Sample characteristics.

Variable	Sample N (%)	Current cigarette smoking N (%)	Current smokeless tobacco use N (%)	Current tobacco use N (%)
Socio-demographics				
All	7137	239 (4.5)	143 (2.4)	279 (5.1)
Age in years				
13-14	2080 (36.7)	39 (1.8)	45 (1.8)	57 (2.6)
15-16	2558 (42.7)	81 (3.2)	51 (2.0)	96 (3.8)
17-18	2485 (20.6)	119 (5.5)	47 (2.3)	126 (5.7)
Sex				
Female	3768 (53.3)	44 (1.1)	47 (1.0)	65 (1.6)
Male	3348 (46.7)	195 (5.5)	96 (3.0)	214 (6.2)
Hunger				
Never	3338 (48.8)	95 (2.8)	59 (2.1)	111 (3.4)
Rarely	1700 (25.2)	71 (3.7)	33 (1.5)	77 (4.1)
Sometimes/mostly/always	2066 (26.0)	72 (3.3)	50 (2.2)	90 (4.1)
Country income¹⁷				
Cambodia (low income)	3806 (53.3)	102 (2.7)	75 (2.3)	127 (3.6)
Vietnam (lower middle income)	3331 (46.7)	137 (4.7)	68 (2.4)	152 (5.2)
Risk behaviour				
Smoked before 14	317 (4.7)	86 (28.6)	51 (15.7)	97 (32.2)
Passive smoking	4364 (65.3)	208 (5.7)	110 (2.8)	235 (6.3)
Current alcohol use	1133 (15.8)	154 (14.3)	77 (7.3)	166 (15.3)
Ever illicit drug use	174 (1.9)	49 (42.2)	41 (32.9)	51 (42.5)
Soft drinks once or more times/daily	2746 (38.0)	114 (4.1)	80 (2.7)	134 (4.8)
Fast food				
0 times a week	5119 (71.0)	144 (2.6)	74 (1.5)	170 (3.1)
1 time a week	1142 (15.3)	41 (3.7)	27 (2.5)	45 (4.1)
2 or more times a week	842 (13.7)	52 (5.8)	40 (4.0)	61 (6.6)
Overweight or obese	340 (4.7)	13 (4.1)	10 (3.3)	14 (4.6)
Ever sex	602 (7.6)	75 (20.3)	50 (11.5)	87 (22.9)
Bullied	1599 (24.7)	89 (5.6)	62 (3.3)	101 (5.9)
Psychological distress				
0	5530 (80.4)	120 (3.3)	59 (1.6)	139 (3.7)
1	1082 (15.5)	70 (7.5)	39 (3.8)	80 (8.4)
2-3	301 (4.1)	25 (8.3)	15 (4.5)	31 (10.9)

and 3,804(53.3%) were girls. The overall mean age was 15.5±1.4 years. Moreover, 3,806(53.33%) participants were from Cambodia and 3,331(46.67%) were from Vietnam. The overall response rate was 3,325(85%) in Cambodia and 3,198(96%) in Vietnam. Overall, 279(5.1%) students reported they were currently using tobacco, including 214(6.2%) boys and 65(1.6%) girls. The prevalence of current cigarette smoking was 239(4.5%) and current smokeless tobacco use was 143(2.4%). The prevalence of current tobacco use was 127(3.6%) in Cambodia and 152(5.2%) in Vietnam (Table-2).

In univariate analysis, socio-demographic factors (older age: crude prevalence ratio [CPR] = 2.96, 95% confidence interval (CI) =1.63-5.39 and being male: CPR=5.21, 95% CI=2.94-9.23) and risk behaviour

(smoked before the age of 14 years: CPR=8.48, 95% CI=6.11-11.78, exposure to passive smoking in the past 7 days: CPR=4.02, 95% CI=2.38-6.80, current alcohol use: CPR=7.83, 95% CI=5.83-10.52, ever illicit drug use: CPR= 10.54, 95% CI=6.59-16.85, having had once or more daily soft drinks: CPR: 1.80, 95% CI=1.30-2.50, having had twice or more times a week fast food: CPR: 2.05, 95% CI=1.35-3.11, ever had sex: CPR=6.72, 95% CI=4.88-9.26, and psychological distress: CPR: 3.70, 95% CI=1.70-5.19) were found to be associated with current tobacco use.

Compared to respondents of age 13 to 14 years, those who were 17 to 18 years and those who were 15 to 16 years of age were more likely to be tobacco users, adjusted prevalence ratio (APR)=2.01, 95% CI=1.22-3.31) and APR=1.66, 95% CI=1.13-2.44, respectively.

Table-3: Associations between current tobacco use prevalence, socio-demographic and risk behaviour in school going adolescents from Cambodia and Vietnam, 2013.

Variable	CPR (95% CI)	APR (95% CI)
Socio-demographics		
Age in years		
13-14	1 (Reference)	1 (Reference)
15-16	1.85 (1.23-2.79)**	1.66 (1.13-2.44)*
17-18	2.96 (1.63-5.39)***	2.01 (1.22-3.31)**
Sex		
Female	1 (Reference)	1 (Reference)
Male	5.21 (2.94-9.23)***	3.47 (1.98-6.10)***
Hunger		
Never	1 (Reference)	---
Rarely	1.06 (0.80-1.40)	
Sometimes/mostly/always	1.00 (0.66-1.54)	
Country income		
Cambodia (low income)	1 (Reference)	---
Vietnam (lower middle income)	1.45 (0.92-2.28)	
Risk behaviour		
Smoked before 14	8.48 (6.11-11.78)***	3.45 (2.65-4.49)***
Passive smoking	4.02 (2.38-6.80)***	3.35 (1.83-6.13)***
Current alcohol use (base=no)	7.83 (5.83-10.52)***	3.47 (2.45-4.92)***
Drug use (base=no)	10.54 (6.59-16.85)***	2.55 (1.49-4.36)***
Soft drinks once or more times/daily	1.80 (1.30-2.50)***	1.43 (0.95-2.16)
Fast food		
0 times a week		
1 time a week	1.54 (0.83-2.84)	1.37 (0.71-2.64)
2 or more times a week	2.05 (1.35-3.11)***	1.04 (0.71-2.64)
BMI overweight or obese (base= no)	1.55 (0.99-2.41)	---
Ever sex (base= no)	6.72 (4.88-9.26)***	2.69 (1.91-3.78)***
Bullied (base=no)	1.25 (0.75-2.08)	---
Psychological distress		
0	1 (Reference)	1 (Reference)
1	2.27 (1.39-3.70)**	1.39 (0.80-2.39)
2-3	2.97 (1.70-5.19)***	1.60 (0.85-3.00)

CPR: Crude prevalence ratio

APR: Adjusted prevalence ratio

CI: Confidence interval

BMI: Body mass index

***P<0.001; **P<0.01; *P<0.05.

Compared to female participants, males were 3.47 (95% CI=1.98-6.10) times more likely current tobacco users. Tobacco-related risk factors that were identified in this analysis were having started smoking before the age of 14 years (APR=3.45, 95% CI=2.65-4.49) and exposure to passive smoking in the past 7 days (APR=3.35, 95% CI=1.83-6.13). Compared with participants who did not currently consume alcohol, those who consumed alcohol were 3.47 (95% CI=2.45-4.92) times more likely to currently use tobacco. Participants who had ever taken illicit drugs were 2.55 (95% CI=1.49-4.36) times more likely to use tobacco compared to those who had never taken illicit drugs. Respondents who ever had sex were 2.69 (95% CI=1.91-3.78) times more likely to be

current tobacco users compared to those who never had sexual intercourse (Table-3).

Discussion

The study investigated in large, nationally representative samples of school-going adolescents in Cambodia and Vietnam the prevalence and correlates of tobacco use. Compared to previous Global Youth Tobacco Surveys (GYTS)³ in Cambodia, the prevalence of current tobacco use among school-going adolescents reduced from 5.1% in 2003, 6.3% in 2010 to 3.8% in 2013, while it increased from 3.8% in 2007 to 5.2% in 2013 in Vietnam.³

It is not clear why tobacco use among adolescents decreased in Cambodia and increased in Vietnam,

especially since tobacco control legislation was implemented from 2012 in Vietnam and only from 2015 in Cambodia.^{4,5} Yet, current tobacco use prevalence rates among adolescents in Cambodia and Vietnam seem to be still lower compared to other ASEAN countries (e.g., Indonesia, Lao PDR, Philippines, Thailand).^{3,6} A possible reason for the relatively low tobacco use prevalence among adolescents in Cambodia and Vietnam is the "late" initiation of smoking (on average 20 years and more) in the latter countries compared to other ASEAN countries.¹ Apart from tobacco control effects during adolescents, Cambodia and Vietnam should strengthen tobacco control efforts during early adulthood.

In agreement with previous studies,⁶⁻⁸ this study found an association between being male and older age and current tobacco use. Having experienced hunger (as a proxy for low socio-economic status) was not associated with tobacco use, as found previously.⁹ Further, as also observed previously,^{6,10} this study found strong associations between substance use variables (early initiation of smoking, exposure to passive smoking, current alcohol drinking and illicit drug use) and tobacco use. The high exposure to passive smoking in this study may explain that tobacco use behaviour may be modelled by parents or guardians or others who smoke in the presence of the adolescent.⁶ In addition, having had sexual intercourse was another risk behaviour, which was found associated with tobacco use, as found in a previous study.¹⁰ These two behaviours (having sexual intercourse and tobacco use) can be considered as pointers of a risk-taking lifestyle or sensation-seeking activities.¹⁸⁻²⁰

Unlike in some previous studies,^{11,12} this study did not find an association between the consumption of soft drinks, fast food and tobacco use in the final model. Psychological distress was in bivariate analysis associated with tobacco use, as found in the previous studies.^{7,10,14} Unlike in some previous studies,^{6,14} bullying victimisation was not found to be associated with tobacco use.

Study limitations include the cross-sectional nature of the study, which means one point in time we would have not been able to assess the tobacco use of those students who were absent that day. Moreover, data was collected by self-report, which may have biased the results.

Conclusion

A large number of adolescents in Cambodia and Vietnam used a significant proportion of tobacco. Several socio-

demographic and a number of risk factors were identified, which can help guide interventions to prevent tobacco use in this population. In particular, tobacco control programmes should incorporate seemingly clustering other risk behaviours, such as alcohol and illicit drug use and sexual behaviour.

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