Prevalence and Psychosocial Correlates of Illicit Drug Use among School-going Adolescents in Thailand

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ABSTRACT Illicit drug use is a relevant public health issue in Thailand. The assessment of the prevalence of illicit drug use among adolescents may guide policies and programmes aimed at reducing illicit drug use among this age group. Using data from the Thailand Global School-Based Student Health Survey (GSHS) 2008, the researchers assessed the prevalence of illicit drug and its associated factors among adolescents (N=2758). Overall, the prevalence of lifetime illicit drug use was 6.0% (11.1% males and 1.3% females). Variables positively associated with the outcome in multivariable analysis were male gender (Odds Ratio (OR)=3.70; 95% Confidence Interval (CI)= 1.89-10.98), current smoking (OR=4.95, CI=2.20-11.14), current alcohol use (OR=6.33, CI=2.75-14.59) and multiple sexual partners (OR=5.19, CI=2.40-11.24). Efforts to prevent and control illicit drug use may need to address a cluster of risk behaviours including cigarette smoking, alcohol use and sexual risk behaviour.

INTRODUCTION

Globally, illicit drug use contributes 2% cause-specific disability-adjusted life-years (DALYs) for young people aged 10-24 years (Gore et al. 2011). Various local studies in Thailand seem to indicate an increase in the prevalence of illicit drug use. In a study of lifetime use of any illicit substance among high school and vocational students (mean age <15 years) in Southern Thailand, an overall prevalence of 5-7% was found (about 7% , 9%, and 13% of boys and 2%, 1% and 3% of girls in 2002, 2003 and 2004, respectively) (Assanangkornchai et al. 2007). In a later study with a similar sample in Southern Thailand the prevalence of lifetime illicit drug use (that is, methamphetamine, cannabis, the leaves of krathom (a local name of *Mytragyna Speciosa* Korth, a tree native to Southeast Asia), inhalants, ecstasy, cocaine, hallucinogens, ketamine, opium and heroin was similar, 13.8% of the boys and 2.2% of the girls (Sam-angsri et al. 2009). Methamphetamine (MA) has been the leading illicit drug in Thailand

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among youth and young adults (Sattah et al. 2002; Sherman et al. 2009).

In addition to the increased risk of chronic diseases at an older age, smoking, drinking and use of illegal substances in adolescence are associated with more immediate health hazards such as depression, interpersonal violence, motor vehicle crashes and drowning, risky sexual behaviour, and suicidal behaviour (Hanna et al. 2001). These behaviours increase the likelihood of adopting other risk behaviours at a later age, such as multiple substance use, violence, and delinquency (DuRant et al. 1999). To determine appropriate preventive measures it is important to assess the roles of various risk factors. Illicit drug use was found to be associated with male gender (Rudatsikira et al. 2009), low socio-economic status (Abiodun et al. 1994), urban residence (Cheng et al. 2006), the use of other substances (Abiodun et al. 1994; Sattah et al. 2002; Cheng et al. 2006; Chen et al. 2009; Rudatsikira et al. 2009), sexual experience or risk behaviour (Sattah et al. 2002; Cheng et al. 2006; Chen et al. 2009; Rudatsikira et al. 2009; Sherman et al. 2009), an experience of sex abuse (Cheng et al. 2006), peer pressure (Sattah et al. 2002), psychosocial distress (Abiodun et al. 1994), truancy (Kokkevi et al. 2007), family-related factors, parent–family connectedness (Resnick et al. 1997; Kokkevi et al. 2007; Sherman et al. 2009), lack of family supervision (Rudatsikira et al. 2009), absence of a

family confidant (Sattah et al. 2002), persuasion by friends, seeking novelty and aggressiveness was pointed out as potential risk factors (Challier et al. 2000; Kokkevi et al. 2007). There is a lack of national studies on illicit drug use among adolescents in Thailand. Therefore, the aim of this study was to assess the prevalence of illicit drug use and associated factors among school-going adolescents in Thailand using the 2008 Thailand Global School-Based Health Survey (GSHS).

METHODS

Participants and Procedures

The study involved the secondary analysis of existing data from the 2008 Thailand Global School-Based Health Survey (GSHS). Details and data of the GSHS can be accessed at http://www.who.int/ chp/gshs/methodology/en/index.html. The aim of the GSHS is to collect data from students of age 13 to 15 years. The Thailand GSHS was a school-based survey of students in Grades 7, 8, 9, and 10. A two-stage cluster sample design was used to collect data to represent all students in Grades 7, 8, 9, and 10 in the country (Ministry of Public Health Thailand, 2008). At the first stage of sampling, schools were selected with probability proportional to their reported enrolment size. 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 (Ministry of Public Health Thailand 2008). A weighting factor was applied to each student record to adjust for non-response and for the varying probabilities of selection. The weighting formula used for the GSHS data sets was: $W=W1 * W2 * f1 * f2 * f3$; base weight: $W1=$The inverse of the probability of selecting each school and $W2=$The inverse of the probability of selecting each class room; non-response adjustment: $f1=$A school-level non-response adjustment factor and $f2=$A student-level non-response adjustment factor calculated by class room; post stratification adjustment: $f3=$A post stratification adjustment factor calculated by sex within grade (Ministry of Public Health Thailand 2008). The school response rate was 100%, the student response rate was 93%, and the overall response rate was 93%. Students self-completed the questionnaires to record their responses to each question on a computer answer sheet able to be scanned. A total of 2,767 students participated in the Thailand GSHS (Ministry of Public Health Thailand 2008). The GSHS 10 core questionnaire modules address the leading causes of morbidity and mortality among children and adults worldwide: tobacco, alcohol and other drug use; dietary behaviors; hygiene; mental health; physical activity; sexual behaviors that contribute to HIV infection, other sexually transmitted infections, and unintended pregnancy; unintentional injuries and violence; protective factors and respondent demographics (Centers for Disease Control 2009; Ministry of Public Health Thailand 2008).

Measures

Substance Use Variables

Smoking cigarettes (current smoking) were assessed with the question, "During the past 30 days, on how many days did you smoke cigarettes?" Response options included 1=0 days to 7=all 30 days. Alcohol use was assessed with the question, "During the past 30 days, on how many days did you have at least one drink containing alcohol?" Response options included 1=0 days to 7=all 30 days. Drug use: 'During your life, how many times have you used drugs, such as methamphetamines (Yaba), ecstasy, 4x100, or marijuana? Response options ranged from 1=0 times to 4=10 or more times.

Poverty: A measure of poverty was derived from a question reporting the frequency that a young person went hungry because there was not enough food at home in the past 30 days (response options were from 1=never to 5=always).

Fighting: 'During the past 12 months, how many times were you in a physical fight?' (1 time to 12 or more times).

Sexual Behaviours

The sexual behaviour item included in this analysis was: 'During your life, with how many people have you had sexual intercourse?' Response options ranged from I have never had sexual intercourse to 6 or more people.

Psychosocial Distress Variables

Loneliness "During the past 12 months, how often have you felt lonely?" (Response options have been from 1 = never to 5 = always).

Anxiety or worry During the past 12 months, how often have you been so worried about something that you could not sleep at night? (Response options have been from 1 = never to 5 = always).

Sadness During the past 12 months, did you ever feel so sad or hopeless almost every day for 2 weeks or more in a row that you stopped doing your usual activities? (Response option 1 = yes and 2 = no).

Suicide Plan "During the past 12 months, did you make a plan about how you would attempt suicide?" (Response option was 1 = yes and 2 = no).

Protective Factors (school attendance, peer support at school, parental or guardian attachment)

Truancy During the past 30 days, on how many days did you miss classes or school without permission? (Response options were from 1=0 times to 5=10 or more times).

Lack of Parental Attachment Parental attachment was assessed with three items. 1) Parental or guardian supervision: "During the past 30 days, how often did your parents or guardians check to see if your homework was done"? 2) Parental or guardian connectedness: "During the past 30 days, how often did your parents or guardians understand your problems or worries?" and 3) Parental or guardian bonding "During the past 30 days, how often did your parents or guardians really know what you were doing with your free time?" Response options to these questions were from 1=never to 5=always. The three parental attachment items were added together to form a "lack of parental attachment index", the Cronbach alpha of this index was 0.67 in this sample.

Lack of Peer Support at school was assessed with the question "During the past 30 days, how often were most of the students in your school kind and helpful?" Response options for this question was from 1=never to 5=always.

Data Analysis

Data analysis was performed using STATA software version 10.0 (Stata Corporation, College Station, TX, USA). This software has the advantage of directly including robust standard errors that account for the sampling design, that is, cluster sampling owing to the sampling of school classes. Psychosocial distress was as-

sessed across the 4 mental health measures when a student's response was indicative of distress: loneliness, anxiety or worried, sadness and suicide plan. The number of psychosocial distress indicators was calculated by determining if students had 0, 1, 2-4 indicators (Page and Hall 2009). Associations between sexual behaviour and socio-demographic, substance use, psychosocial distress variables and protective factors were evaluated calculating odds ratios (OR). Unconditional logistic regression was used for evaluation of the impact of explanatory variables for sexual intercourse in the past 12 months (binary dependent variables). All variables statistically significant at the $P < .05$ levels in bivariate analyses were included in the multivariable models. In the analysis, weighted percentages are reported. The reported sample size refers to the sample that was asked the target question. The two-sided 95% confidence intervals are reported. The P values less or equal to 5% is used to indicate statistical significance. Both the reported 95% confidence intervals and the P value are adjusted for the multi-stage stratified cluster sample design of the study.

RESULTS

Table 1 gives the sample characteristics of 2758 participants, mainly between 12 to 15 years old (2675, 95.6%) and 53.2% females and 46.8% males. Overall the prevalence of lifetime illicit drug use was 6.0% (11.1% males and 1.3% females). Among lifetime illicit drug users, 44.7% of the boys and 20.0% of the girls had used illicit drugs three or more times. Current smoking and current other tobacco use were reported by 8.2% and 7.2%, respectively. Current alcohol use was 14.8% and lifetime illicit drug use 6.0%. Sexual intercourse in the past 12 months was reported by 11% of the adolescents. Substance use and sexual behaviour variables were all higher among males than females. More than a quarter (26.6%) of the participants had at least one psychosocial distress indicator.

The results of the bivariate and multivariable logistic regression analyses are presented in Table 2. In bivariate analyses, male gender, poverty, fighting, current smoking, current other tobacco use, current alcohol use, sexual intercourse in the past 12 months, multiple sexual partners, psychosocial distress, truancy, lack of peer support and parental or guardian supervi-

Table 1: Sample characteristics among adolescents in Thailand, 2008, N=2758

	Total N (%)	Males N (%)	Females N (%)
Age (years)			
≤12	466 (17.0)	201 (15.6)	265 (18.2)
13	840 (29.5)	407 (30.9)	433 (28.1)
14	870 (28.7)	443 (30.3)	427 (27.2)
≥15	582 (24.9)	313 (23.2)	269 (26.5)
Gender			
Female	1394 (53.2)		
Male	1364 (46.8)		
Poverty or Went Hungry			
No (never, rarely)	2557 (96.6)	1294 (95.3)	1363 (97.9)
Yes (sometimes, most of the time or always)	94 (3.4)	63 (4.7)	31 (2.1)
Fighting			
No	1822 (66.7)	745 (54.4)	1077 (78.3)
Yes (1-12 or more times in the past 12 months)	931 (33.3)	617 (45.6)	314 (21.7)
Current Smoking			
No	2440 (91.8)	1092 (85.0)	1348 (97.8)
Yes (any in the past 30 days)	220 (8.2)	190 (15.0)	30 (2.2)
Current Alcohol Use			
No	2126 (85.2)	928 (78.8)	1198 (90.7)
Yes (any in the past 30 days)	368 (14.8)	247 (21.2)	121 (9.3)
Lifetime Illicit Drug Use			
No	2579 (94.0)	1206 (88.9)	1373 (98.7)
Yes	167 (6.0)	147 (11.1)	20 (1.3)
1-2 times	96 (58.0)	80 (55.3)	16 (80.0)
3-9 times	40 (24.0)	36 (24.5)	4 (20.0)
10 or more times	31 (18.0)	31 (20.2)	0 (0.0)
Two or More Lifetime Sexual Partners			
No	2451 (94.5)	1132 (90.2)	1319 (98.4)
Yes	141 (5.5)	121 (9.8)	20 (1.6)
No Psychosocial Distress Indicators			
0	1939 (73.4)	935 (73.3)	1004 (73.4)
1	445 (16.9)	206 (16.6)	239 (17.3)
2	192 (7.1)	101 (8.0)	91 (6.4)
3 or 4	65 (2.5)	27 (2.0)	38 (3.0)
Protective Factors			
Truancy (any day in past 30 days)	467 (17.1)	317 (24.0)	150 (10.6)
Lack of peer support (never or rarely in past 30 days)	1583 (58.3)	872 (65.6)	711 (51.5)
Lack of Parental/Guardian Attachment			
Low (0)	447 (16.5)	169 (12.9)	278 (19.8)
Medium (1-2)	1240 (46.2)	607 (45.5)	633 (46.9)
High (3)	1000 (37.3)	547 (41.7)	a453 (33.3)

sion, connectedness and bonding were positively associated illicit drug use. In multivariable unconditional regression analysis, male gender (Odds Ratio (OR)=3.70; 95% Confidence Interval (CI)= 1.89-10.98), current smoking (OR=4.95, CI=2.20-11.14), current alcohol use (OR=6.33, CI=2.75-14.59) and multiple sexual partners (OR=5.19, CI=2.40-11.24) were retained in this model.

DISCUSSION

The study found among in-school adolescents in Thailand using the Global School Health Survey (GSHS) of 2008 an overall prevalence of lifetime illicit drug use of 6.0%, 11.1% among male and 1.3% among female adolescents, aged 12 to 17 years. Similar rates of illicit drug use were found in a local study in Southern Thailand (5-7%) (Assanangkornchai et al. 2007) and in the Philippines (4.3%) (Global School-based Student Health Survey 2007b) but it seems lower than in some other studies in Southern Thailand (13.8% for boys and 2.2% for girls) (Samangsri et al. 2010) and among school-going adolescents in Harare (Zimbabwe) (9%) (13.4% males and 4.9% females) (Rudatsikira et al. 2009).

Table 2: Bivariate and multivariable logistic regression analysis of factors that are associated with lifetime illicit drug use among adolescents in Thailand, 2008

	UOR (95% CI)	P-value	AOR (95% CI)	P-value
Age (years)				
≤12	1.00		1.00	
13	1.13 (0.57-2.22)	0.717	0.77 (0.26-2.31)	0.625
14	1.47 (0.82-2.64)	0.185	0.78 (0.32-1.94)	0.574
≥15	1.43 (0.62-3.29)	0.380	1.12 (0.42-2.96)	0.810
Gender				
Female	1.00		1.00	
Male	9.64 (5.49-16.91)	0.000	3.70 (1.89-10.98)	0.022
Poverty				
No	1.00		1.00	
Yes	5.07 (2.15-11.97)	0.001	2.01 (0.31-5.06)	0.211
Fighting				
No	1.00		1.00	
Yes	4.37 (2.84-6.71)	0.000	1.56 (0.83-2.92)	0.155
Current Smoking				
No	1.00		1.00	
Yes	19.83 (12.84-30.63)	0.000	4.95 (2.20-11.14)	0.001
Current Alcohol Use				
No	1.00		1.00	
Yes	31.06 (20.04-48.13)	0.000	6.33 (2.75-14.59)	0.000
Two or More Lifetime Sexual Partners				
No	1.00		1.00	
Yes	26.02 (16.52-41.00)	0.000	5.19 (2.40-11.24)	0.000
No of Psychosocial Distress Indicators				
0	1.00		1.00	
1	1.32 (0.87-2.01)	0.180	1.62 (0.67-3.88)	0.262
2-4	3.88 (2.41-6.24)	0.000	2.38 (0.91-6.21)	0.089
Protective Factors				
Truancy	9.64 (5.94-15.63)	0.000	2.78 (0.99-7.74)	0.050
Lack of peer support	2.30 (1.49-3.55)	0.001	1.17 (0.58-2.37)	0.633
Lack of parental/guardian attachment				
Low (0)	1.00			
Medium (1-2)	3.05 (1.44-6.48)	0.006	1.36 (0.56-328)	0.470
High (3)	6.75 (3.58-12.72)	0.000	1.76 (0.68-4.56)	0.224

However, the rates of illicit drug use among adolescents in this study in Thailand seemed much higher than in Myanmar (0.5%) (Global School-based Student Health Survey 2007a) and Indonesia (0.5%) (Indonesia Ministry of Health 2007).

In this study, males were more likely to have reported illicit use, alcohol and tobacco use than females. This predominance of males in potentially unhealthy lifestyles has also been found in a number of other studies, in Bangkok (Ruangkanchanastr et al. 2005), in Harare, Zimbabwe (Rudatsikira et al. 2009), tobacco use and illicit drugs in six African countries (Peltzer 2009). The study further showed that adolescents who engaged in illicit drug use were also more likely to have used cigarettes and alcohol and had multiple sexual partners. Several authors have described "clustering" of unhealthy or risk behaviours including alcohol use, illicit drugs and

smoking (Faeh et al. 2006; Liu et al. 2006; Palen et al. 2006; Chinsembu et al. 2008, 2011; Rudatsikira et al. 2009). Further, several studies also found an association between illicit drug use and sexual experience or risk behaviour (in particular Methamphetamine) (Sattah et al. 2002; Cheng et al. 2006; Chen et al. 2009; Rudatsikira et al. 2009; Sherman et al. 2009). Further, the study found that truancy was marginally significantly associated with illicit drug use, as found in other studies (for example, Kokkevi et al. 2007). Illicit drug use or truancy may be a marker of other dysfunctional behaviours. It is also possible that the unsupervised free time that truant adolescents have may make them more likely to experiment with illicit drugs than if they were in school (Siziya et al. 2007).

The study found that psychosocial distress and parental protective factors as measured in

this study were in bivariate but not in multivari-able analysis associated with illicit drug use. The bivariate findings are consistent with previous research among African school-going adolescents that psychosocial distress and substance use are interconnected (Page and Hall 2009) and parental supervision was a protective factor for marijuana or glue use in Zimbabwe (Rudatsikira et al. 2009).

The connection between illicit drug use and various risk factors including problem behaviour such as tobacco, alcohol use and multiple sexual partners indicates that prevention programmes should broaden health promotion and include these factors collectively in health interventions for (early) adolescents (Page and Hall 2009). Poverty as an indicator of low socioeconomic status, was in this study not associated with illicit drug use, which differs from other studies (Abiodun et al. 1994; Challier et al. 2000). Possible reasons for not finding an association between poverty and illicit drug use, may be because only very few (3.4%) in the study sample had indicated that they sometimes, most of the time or always were going hungry because there was not enough food at home in the past 30 days.

CONCLUSION

The researchers have estimated the prevalence of lifetime illicit drug use amongst in-school adolescents in Thailand. Public health intervention aimed to prevent illicit drug use among adolescents should be designed with the understanding that illicit drug use may be associated with other risk behaviours such as cigarette smoking, alcohol use and risky sexual behaviour.

LIMITATIONS OF THE STUDY

This study had several limitations. Firstly, the GSHS only enrolls adolescents who are in school. School-going adolescents may not be representative of all adolescents in a country as the occurrence of illicit drug use may differ between the two groups. Also we did not assess regional and urban-rural differences in illicit drug use. As the questionnaire was self-completed, it is possible that some study participants may have misreported either intentionally or inadvertently on any of the questions asked. Intentional misreporting was probably minimized by the fact that study participants completed the questionnaires anonymously. Further, the self-report of illicit drug use should be interpreted with caution; it is possible that respondents underreported illicit drug use, especially females. Audio-computer-assisted self-interviewing could have resulted in higher rates of reporting (Van Griensven et al. 2001). A number of risk factors associated with illicit drug use found in other studies such as school status, physical maturity, involvement in dating behaviour, delinquency, school problems, academic performance, delinquency, peer and older sibling models of use and parent factors and characteristics of the sexual partner (DuRand et al. 1999; Challier et al. 2000; Sattah et al. 2002; Kliewer and Murrelle 2007; Kokkevi et al. 2007) were not assessed and should be assessed in future studies. Furthermore, this study was based on data collected in a cross-sectional survey. The researchers cannot, therefore, ascribe causality to any of the associated factors in the study. Prospective studies are required to follow up illicit drug use and associated factors. Lastly, the key outcome question of illicit drug use "During your life, how many times have you used drugs, such as methamphetamines (Yaba), ecstasy, 4x100, or marijuana?" does not allow us to distinguish which drug was used.

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