

PREVALENCE AND ASSOCIATED RISK FACTORS OF SUBSTANCE ABUSE AMONG ADOLESCENTS IN RURAL COMMUNITIES, CENTRAL THAILAND: A CROSS-SECTIONAL STUDY

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Abstract

Background: Substance abuse is one serious social challenge that has continued to increase over a long time. This major problem currently affects society, the economy and national development. One related study conducted in southern Thailand found that the prevalence of substance abuse in youth groups was 7% in 2002 increasing to 9% and 13% in 2003 and 2004, respectively. Nevertheless, information regarding substance abuse among adolescents in Thailand remains limited especially in remote rural communities. The study aimed to determine the prevalence and associated factors concerning substance abuse.

Methods: The present study was conducted in 2 high schools in rural communities, Chachoengsao and Sa Kaeo Provinces, central Thailand. A cross-sectional quantitative study identified the prevalence and associated factors of substance abuse among adolescents. A standardized self-reported questionnaire was used to collect data including demographic characteristics, history of substance abuse and associated factors. Multivariate analysis was performed to adjust confounders using logistic regression analysis.

Results: The sample size of the study totaled 652 adolescents. The lifetime prevalence of substance abuse was 24.4%, while the one-year prevalence of substance abuse was 16.7%. After adjusting for potential confounders, the risk factors associated with one year substance abuse among adolescents were being male (AORs; 2.19, 95%CI; 1.16–4.16), friend inducement (AORs; 3.28, 95%CI; 1.64–6.55), smoking (AORs; 3.22, 95%CI; 1.50–6.90) and alcohol consumption (AORs; 4.46, 95%CI; 2.43–8.16).

Conclusion: Our data emphasized that substance abuse was a problem in these rural communities. Public health interventions aimed to prevent substance abuse among adolescents should be designed and provided for these rural communities. Further, schools should provide lessons how to negotiate and avoid coercion when being induced to abuse substances or other unhealthy and dangerous behaviors.

Keywords : Substance abuse, adolescents, rural community, Thailand

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Introduction

Substance abuse represents one serious social challenge that has continued to increase over a long time. It constitutes one of the major problems currently affecting society, the economy and national development.^(1, 2) Moreover, illicit drugs affect several aspects among users including emotional, social, physical and mental health.^(3,4) Because all drugs directly affect the brain, using highly addictive drugs many consecutive times will eventually lead to addiction. Importantly, drug addiction leads to many complications including psychosis, depression and aggressive behaviors.^(5,6) At present, the Thai government provides a great deal of funding and other resources to manage drug problems. The government has used both internal and collaborative efforts with the awareness that narcotics may contribute to social problems such as crime, prostitution and gambling. These problems threaten national security, public order, moral practices and the economy. However, substance abuse is still escalating among adolescents. One related study in southern Thailand found that the prevalence of substance abuse in youth groups was 7% in 2002 increasing to 9% and 13% in 2003 and 2004, respectively.⁽⁷⁾

One half of areas in Thailand are still rural (47%) where healthcare provider characteristics and health literacy differ from those of urban communities especially in remote rural areas.⁽⁸⁾ Nevertheless, information regarding substance abuse among adolescents in Thailand remains limited especially in remote rural communities. Additionally, adolescents constitute a teenage population who will grow up to become adults soon. However, these young people are more likely to become addicted to illegal substances due to developmental changes in the neural circuitry involved in reward processing.⁽⁹⁾ This study aimed to determine the prevalence and associated risk factors of substance abuse among adolescents in remote rural communities in central Thailand. When substance issues of adolescents are detected and solved early on, the complications of addiction may be attenuated.

Methods

The present study was conducted in two high schools in rural communities, Chachoengsao and Sa Kaeo Provinces,

central Thailand, 160 km east of Bangkok. This remote, isolated community totaled 15,000 villagers, mostly farmers. Schools no.1 and no.2 are government high schools providing education in grades 7 to 12 for adolescents residing in peripheral areas of schools. Both schools were chosen to represent schools in remote rural communities in central Thailand. A cross-sectional quantitative study identified the prevalence and associated factors of substance abuse among adolescents. The survey was conducted among 451 students in school no. 1 and 201 students in school no. 2. A standardized self-reported questionnaire was used to collect data including demographic characteristics, history of substance abuse and associated factors. The questionnaires were self-administered and delivered in an envelope. However, names and identities of the volunteers in the study were kept confidential. We checked the collected data using double-data entry for accuracy and completeness and then coded, entered and analyzed the data using IBM SPSS Statistics for Windows, Version 23.0. Frequency distribution of demographic characteristics and behavioral data were calculated to determine descriptive statistics of the sample. Chi-square test was used to compare frequency distribution of categorical variables by strata, while binary logistic regression analysis was used to determine the risk factors associated with substance abuse. The magnitude of association was presented as crude odds ratios (ORs) with 95% confidence interval (CI). A *p*-value less than 0.05 was considered statistically significant. Multivariate analysis was performed to adjust confounders using logistic regression analysis using the backward elimination method (Wald).

This study was reviewed and approved by the Institutional Review Board, Royal Thai Army Medical Department. Consent forms were completed by the main guardian of each adolescent and adolescents before they participated in the study.

Results

The sample size of the study totaled 652 adolescents. The response rate of schools no.1 and no.2 accounted for 75.2% and 71.0%, respectively. Descriptive characteristics of the study sample are presented in **Table 1**. In all, 451 (69.2%) students were from school no.1 in Chacheongsao

Table1. Demographic characteristics of the enrolled school children

Characteristics	n	(%)
Age (years)		
mean ± S.D.		14.87±1.70
min-max		12-19
School		
No. 1	451	(69.2)
No. 2	201	(30.8)
Sex		
Male	270	(41.7)
Female	378	(58.3)
Grade		
7 th	125	(19.2)
8 th	142	(21.8)
9 th	122	(18.7)
10 th	89	(13.7)
11 th	106	(16.3)
12 th	68	(10.4)
Religion		
Buddhism	641	(98.3)
Christian	9	(1.4)
Others	2	(0.3)
History of school suspension		
No	620	96.9
Yes	20	3.1
History of parents being called by teacher		
No	608	(95.3)
Yes	30	(4.7)
Family income per year (baht)		
<50000	80	(51)
≥50000	77	(49)
GPA 1st semester 2017		
mean ± S.D.		2.82±0.62
GPA 2016		
mean ± S.D.		2.84±0.67

and 201 (30.8%) students were from school no. 2 in Sa Kaeo. In all, male participants accounted for 41.7%. The average age of participants was 14.8±1.7 years.

The lifetime prevalence of substance abuse was 24.4%. The one-year prevalence of substance abuse was 16.7% with a higher prevalence noted among males (24.1%) than females (11.6%). **Figure 1** shows the prevalence of substances abuse among adolescents in rural communities stratified by type of substance. Cannabis was the most commonly abused substance on a lifetime basis accounting for 4.4%. Univariate and multivariate logistic regression analyses were performed to determine the factors associated with one year substance abuse as shown in **Tables 2 and 3**. After adjusting for potential confounders, the risk factors associated with one year substance abuse among adolescents included being male (adjusted odds ratio (AORs); 2.19, 95%CI; 1.16–4.16), friend inducement (AORs; 3.28, 95%CI; 1.64–6.55), smoking (AORs; 3.22, 95%CI; 1.50–6.90) and alcohol consumption (AORs; 4.46, 95%CI; 2.43–8.16).

Discussion

The lifetime prevalence of substance abuse among adolescents in the present study was 24.4%, which was relatively high compared with one related study in southern Thailand.⁽⁷⁾ A recent study conducted among high school years 7, 9 and 11 and vocational students to determine the situation of substance abuse among adolescents in both urban and rural areas in southern Thailand showed an overall lifetime prevalence of illicit drug use accounting for 5 to 7%.⁽⁷⁾ Another study in four regions of Thailand conducted between 2001 and 2011 reported the lifetime prevalence of illicit drug use accounted for 5.4 to 7.3%.⁽¹⁰⁾ Additionally, one recent report in 2015 illustrated that the lifetime prevalence of substance use among adolescent students was 12.7%.⁽¹¹⁾

Obviously, the trend in the lifetime prevalence of substance use continuously rose overtime. The study found that the one year prevalence of substance abuse among adolescents in rural Thailand was 16.7%. Compared with one year prevalence of substance abuse among adolescents in our study, the one year prevalence of those in one related study in 2004 was relatively low.⁽⁷⁾

Fig 1. Prevalence of substance use among adolescents in the rural communities stratified by type of substance

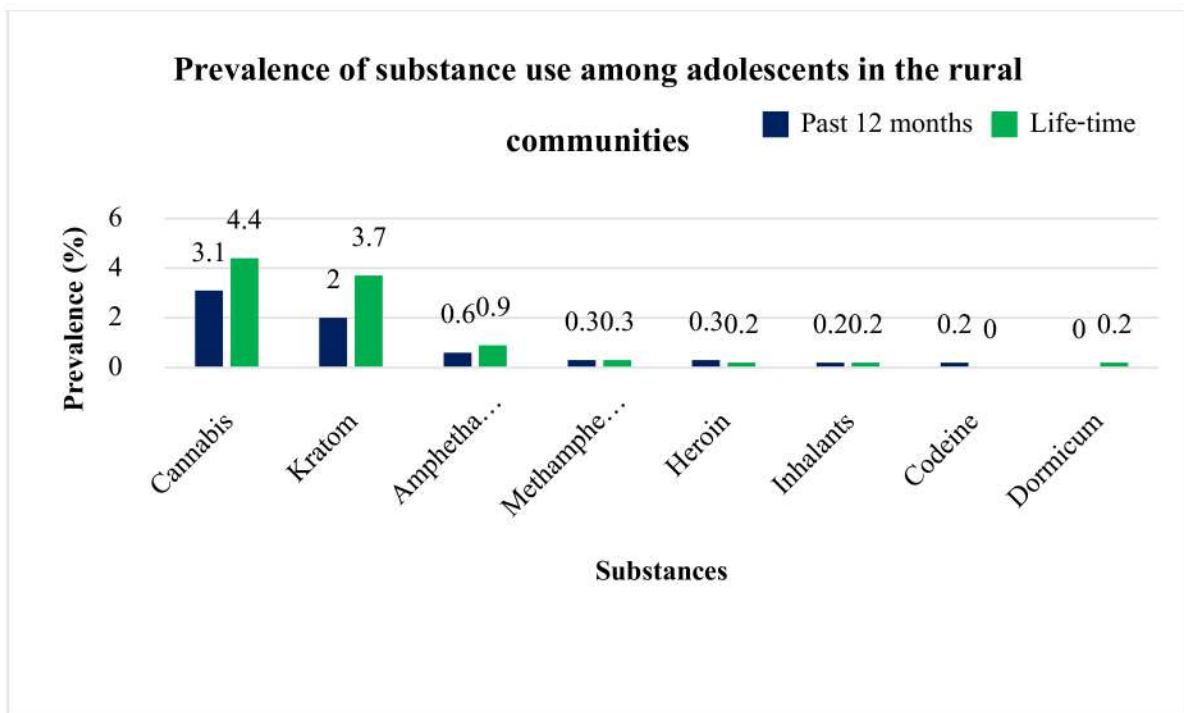


Table 2. Univariate analysis for factors associated with one year substance used

Factors	Substance used		Crude ORs	95% CI	p-value
	No n (%)	Yes n (%)			
Sex					
Female	334 (88.4)	44 (11.6)	1		
Male	205 (75.9)	65 (24.1)	2.41	(1.58-3.66)	<0.001
Age (year)					
mean ± S.D.	14.8±1.7	15.1±1.6	1.11	(0.98-1.25)	0.096
School					
School 2	175 (87.1)	26 (12.9)	1		
School 1	368 (81.6)	83 (18.4)	1.52	(0.94-2.44)	0.086
Grade					
7 th – 9 th	326 (83.8)	63 (16.2)	1		
10 th – 12 th	217 (82.5)	46 (17.5)	1.09	(0.72-1.67)	0.664
GPAX					
≥3.00	268 (85.1)	47 (14.9)	1		
<3.00	157 (83.5)	31 (16.5)	1.13	(0.69-1.85)	0.638
History of school suspension					
No	523 (84.4)	97 (15.6)	1		
Yes	13 (65.0)	7 (35.0)	2.9	(1.13-7.46)	0.027
History of parents being called by teacher					
No	517 (85.0)	91 (15.0)	1		
Yes	17 (56.7)	13 (43.3)	4.35	(2.04-9.25)	<0.001
Parents' marital status					
Married	336 (83.4)	67 (16.6)	1		
Widow	16 (72.7)	6 (27.3)	1.88	(0.71-4.98)	0.204
Divorced/Separated	189 (84.0)	36 (16.0)	0.96	(0.61-1.49)	0.839
Main guardian					
Father/Mother	367 (82.3)	79 (17.7)	1		
Others	176 (85.4)	30 (14.6)	0.79	(0.50-1.25)	0.317
Siblings					
One or more sibling	409 (83.1)	83 (16.9)	1		
No sibling	134 (83.8)	26 (16.3)	0.96	(0.59-1.55)	0.855
Residency					
Home	523 (83.4)	104 (16.6)	1		
Others	18 (78.3)	5 (21.7)	1.39	(0.51-3.85)	0.518
Family income per year (baht)					
<50000	69 (86.3)	11 (13.8)	1		

Table 2. Univariate analysis for factors associated with one year substance used

Factors	Substance used		Crude ORs	95% CI	p-value
	No	Yes			
	n (%)	n (%)			
≥50000	61 (79.2)	16 (20.8)	1.65	(0.71-3.82)	0.246
Social media use					
No	285 (83.6)	56 (16.4)	1		
Yes	258 (83.0)	53 (17.0)	1.05	(0.69-1.58)	0.832
Having boyfriend/girlfriend					
No	401 (85.1)	70 (14.9)	1		
Yes	142 (78.5)	39 (21.5)	1.57	(1.02-2.43)	0.042
Regular exercise					
No	283 (84.5)	52 (15.5)	1		
Yes	254 (82.2)	55 (17.8)	1.18	(0.78-1.79)	0.438
Having love problems					
No	350 (85.6)	59 (14.4)	1		
Yes	189 (79.1)	50 (20.9)	1.569	(1.035-2.38)	0.034
Having academic problems					
No	354 (86.8)	54 (13.2)	1		
Yes	189 (77.5)	55 (22.5)	1.91	(1.26-2.89)	0.002
Having financial problems					
No	268 (85.4)	46 (14.6)	1		
Yes	275 (81.4)	63 (18.6)	1.34	(0.88-2.02)	0.173
Having family problems					
No	379 (87.1)	56 (12.9)	1		
Yes	164 (75.6)	53 (24.4)	2.19	(1.44-3.32)	<0.001
Friend inducement of substance abuse					
No	467 (88.4)	61 (11.6)	1		
Yes	50 (59.5)	34 (40.5)	5.21	(3.12-8.68)	<0.001
Family member involves in addictive substance					
No	450 (85.1)	79 (14.9)	1		
Yes	63 (74.1)	22 (25.9)	1.99	(1.15-3.42)	0.013
Smoking					
No	499 (89.1)	61 (10.9)	1		
Yes	44 (47.8)	48 (52.2)	8.92	(5.48-14.54)	<0.001
Alcohol drinking					
No	375 (91.0)	37 (9.0)	1		
Yes	168 (70.0)	72 (30.0)	4.34	(2.81-6.72)	<0.001

Table 3. Multivariate analysis for factors associated with one year substance used

Factors	Substance used		Adjusted ORs	95% CI	p-value
	No n (%)	Yes n (%)			
Sex					
Female	334 (88.4)	44 (11.6)	1		
Male	205 (75.9)	65 (24.1)	2.19	1.16-4.16	0.016
Friend inducement of substance abuse					
No	467 (88.4)	61 (11.6)	1		
Yes	50 (59.5)	34 (40.5)	3.28	1.64-6.55	0.001
Smoking					
No	499 (89.1)	61 (10.9)	1		
Yes	44 (47.8)	48 (52.2)	3.22	1.50-6.90	0.003
Alcohol drinking					
No	375 (91.0)	37 (9.0)	1		
Yes	168 (70.0)	72 (30.0)	4.46	2.43-8.16	<0.001

Multivariate analysis (Backward Wald): adjusted for gender, friend inducement of substance use, smoking and alcohol drinking

The phenomenon may be explained by geographic area. The present study was conducted in remote rural communities where healthcare provider characteristics and health literacy differ from those of urban communities especially in remote rural areas.⁽⁸⁾ Local people including adolescents and young adults may lack health literacy regarding the burden of illicit drugs as well as their complications.^(12, 13)

Most studies found that substance abuse was more common among male adolescents.^(7, 10, 14) In the present study, the prevalence of substance use among male adolescents was significantly higher as well. In the study, cannabis was the most commonly used substance with overall rate of one year abuse accounting for 3.1%. A similar result was found in one report from Thailand in 2001.⁽¹⁰⁾ Cannabis is easy to access and cheaper than other illicit substances. Furthermore, cannabis is easy to cultivate in Southeast Asia and carries lower penalties compared with other illicit substances such as amphetamines. Similarly, kratom, *Mitragyna speciosa*, which has been traditionally used for both their stimulant properties as well as an opium substitute,⁽¹⁵⁾ was the second most commonly used substance among adolescents accounting for 2%. One related study in Thailand illustrated that both cannabis and kratom were the most common one year use

substances among adolescents.⁽⁷⁾ Adolescents may perceive that they take less risk in trying kratom than other substances; moreover, kratom is an addictive plant commonly found in Thailand and traditionally used by villagers especially in rural areas. Some villagers believed that kratom may enhance work performance by increasing endurance and tolerance and that it can be used to attenuate fatigue and treat some illnesses.⁽¹⁶⁾

Factors related to substance abuse included being male, friends persuaded to try the substance, smoking and alcohol consumption in the past 12 months. Among male adolescents, the prevalence of drug use was 2.19 times greater than that among female adolescents due to the nature of life style among friends and interests that differed from females.⁽¹⁷⁾ Persuasion to use drugs in a group of friends increases the risk of substance abuse up to 3.28 times because Thai teenagers often join together as a group of friends and are at the age of wanting to be accepted by friends. Thus, adolescents are often persuaded in their group of friends to do something, to make themselves accepted by their group members.⁽¹⁸⁾ Alcohol consumption in the past 12 months has been found to be related to substance use 4.46 times higher than nonalcohol consumption. Because alcohol is often consumed in a

group setting it can lead to loss of self-esteem, wherein they tend to be easily persuaded to use illicit drugs.⁽¹⁹⁾ Smoking was found to be another factor related to substance abuse. Nicotine, the main addictive chemical in tobacco smoke, can induce dopamine release in the brain in a reward circuit creating a desire for other substances. Additionally, related studies have reported that adolescent nicotine exposure influences long term biochemical and functional changes in the brain that encourages subsequent drug use.^(20,21)

The limitations of this study were that only students from two schools were included in this study so it could not represent the whole population in rural communities. The study employed a cross-sectional design, making it difficult to establish a cause-and-effect relationship between associated factors and substance abuse.

In conclusion, the study showed a high prevalence of substance use among adolescents and associated factors included being male, friend inducement, smoking and alcohol consumption. The adolescents were in the age group that receives various social influences. Therefore, we should focus on this problem. Public health interventions aimed to prevent and reduce substance abuse should be designed so that these adolescents can grow into quality adults in the future.

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