RISKY SEXUAL BEHAVIOR AMONG OUT-OF-SCHOOL THAI AND NON-THAI YOUTH IN URBAN CHIANG MAI, THAILAND

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Abstract. Out-of-school youth in Thailand engage in risky sexual behavior that puts them at risk for contracting HIV infection and can have other negative sexual reproductive health outcomes. No study has examined risky sexual behaviors and compared them between Thai and non-Thai out-of-school youth. The current study compares sexual risk behavior and HIV testing behavior between out-of-school Thai and non-Thai youth. We conducted face-to-face interviews in this study population in urban Chiang Mai during 2014. Participants were recruited through convenience sampling from two main sources: non-formal education centers (NFECs) and social meeting places. We recruited 924 youth, aged 15-24 years, of whom 424 (45.9%) were Thai and 500 (54.1%) were non-Thai. The majority were attending NFECs (82.3%). Of the sexually experienced participants (57.7%), 75.4% did not use condoms consistently, and 50.3% had at least 2 lifetime sexual partners. Among the study participants, the Thai studied youth had significantly higher odds of ever having had sex (AOR=2.33; 95% CI: 1.56-3.49; $p<0.001$), having an earlier sexual debut (AOR=5.52; 95% CI: 2.71-11.25; $p<0.001$) and having a larger number of lifetime sexual partners (AOR=2.31; 95% CI: 1.37-3.88; $p=0.002$) than non-Thai participants. There was no significant difference between the Thai and non-Thai participants in terms of having HIV testing. The Thai studied youth were more likely to engage in risky sexual behavior than the non-Thai youth. However, both groups displayed risky sexual behaviors. Future research should explore in-depth the drivers of risky sexual behaviors among both Thai and non-Thai youth.

Keywords: sexual behavior, HIV testing, out-of-school youth, Chiang Mai

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INTRODUCTION

As of December 2010, people aged 15-24 years globally accounted for approximately 42% of new HIV infections among those aged ≥15 years (UNAIDS, 2012).

People aged 15-24 years accounted for 6.8% of people living with HIV worldwide in 2011 (WHO, 2011). The vulnerability of young people to HIV infection, sexually transmitted infections (STIs) and other negative sexual and reproductive health problems is due to a variety of factors operating at the individual, interpersonal, community, and structural levels (Ross *et al*, 2006). These factors include insufficient knowledge about HIV/AIDS, lack of education and life skills, a low-risk perception of HIV/AIDS, and poor access to sexual and reproductive health services (Ross *et al*, 2006). These factors are intertwined with social, psychological, economic, and biological transformations that occur during adolescence (Casey *et al*, 2008; Schmithorst and Yuan, 2010; Pettifor *et al*, 2013).

Young people in Thailand are a heterogeneous group that includes people who inject drugs (PWID), men who have sex with men (MSM), commercial sex workers (CSWs) and out-of-school youth (National AIDS Management Center *et al*, 2014). Studies of risky sexual behavior in Thailand are primarily of MSM, CSWs and PWID (Kawichai *et al*, 2006; Nhurod *et al*, 2010; National AIDS Management Center *et al*, 2014; Vutthikraivit *et al*, 2014; Thepthien *et al*, 2015).

In Thailand, in addition to the regular school track there are informal and non-formal education tracks (Siltragool, 2007). These programs offer the opportunity for out-of-school youth to get a basic education on a tutorial basis delivered once a week for three hours.

In 2014, there were approximately 1,200 youth aged 15-24 years studying at the non-formal education centers (NFECs) in Chiang Mai City, the study area for our study (Chiang Mai Provincial Non-Formal and Informal Education, 2014). As in previous studies (Burns *et al*, 2004; Tangmunkongvorakul *et al*, 2010; Tangmunkongvorakul *et al*, 2012a,b), the term "out-of-school youth" in the current study includes groups of young people who have dropped out of school, who never attended school, or who participate in non-formal school programs. In a prior study from Chiang Mai City (Tangmunkongvorakul *et al*, 2010; Tangmunkongvorakul *et al*, 2012a,b), out-of-school Thai youth were more likely to be sexually experienced, have a lower mean age of sexual debut and a larger number of lifetime sexual partners than their counterparts who attended formal education. Most importantly, out-of-school youth are a harder-to-reach population who are less effectively reached by health interventions; therefore, miss valuable opportunities to learn about HIV and reproductive health (Burns *et al*, 2004; Alemu *et al*, 2007; Sun *et al*, 2012; Zhu *et al*, 2015).

Out-of-school non-Thai nationals in Thailand are mainly migrant workers - particularly from Myanmar, Lao PDR and Cambodia. In 2013, there were 77,616 legal migrant workers registered with the Chiang Mai City Municipality, of whom 25% were aged 15-24 years. (Office of Foreign Workers Administration, 2013). Migrant workers are more likely to engage in risky sexual behavior and have limited access to sexual and reproductive health services (Mullany *et al*, 2003; Ford and Chamrathrithirong, 2007, 2008; Chamratrithirong *et al*, 2012).

In Thailand, there has been no study, as far as we know, that compared out-of-school Thai and non-Thai youth in terms of sexual risk and HIV testing behavior. In addition, there have been no published studies examining whether or not out-of-school youth enrolled in NFECs differ from those who do not attend NFECs

in respect to their sexual risk behaviors. Therefore, the current study attempts to address the above gaps in knowledge about these youth in the Chiang Mai City, Thailand.

MATERIALS AND METHODS

Study design, participants, and setting

This study was conducted in Chiang Mai City between June and December 2014. Participants were recruited from two main sources using convenience sampling. The first source was NFECs. In Chiang Mai City there are 16 NFECs. All age-eligible youth present on a teaching day were invited to participate in the study.

Participants were also recruited from 19 social meeting places frequented by youth. These included camps, temples, and construction sites. Participants were convenience- sampled at these sites.

All participants spoke Thai, Shan, or Burmese. For those with no or limited Thai speaking ability, our research team included interviewers who were able to conduct interviews in the native languages of the participants (*eg*, Shan, Burmese).

Survey instrument

A structured questionnaire was developed for this study based on the instrument obtained from the Bureau of Epidemiology, Ministry of Public Health for Thailand (Bureau of Epidemiology, 2011) and the Individual Questionnaire for Migrant Workers for Prevention of HIV/AIDS among Migrant Workers in Thailand 2 (PHAMIT 2): The Baseline Survey 2010 (Chamratrithirong *et al*, 2012). Our developed questionnaire was pilot-tested and revised before use. Interviewers administered the questionnaire.

The questionnaire asked 1) whether the participants had ever had sex, 2) the number of lifetime sexual partners, 3) the consistency of condom use, 4) age of sexual debut (early sexual debut defined as sexual onset before the age of 15) and 5) whether participants had ever been tested for HIV. The questionnaire asked about demographics: age, sex, living status, education level, employment status and ethnicity. The questionnaire also asked whether the participant had drunk alcohol in the past year and whether they had smoked tobacco in the past year.

Statistical analysis

We used SPSS (PASW) for Windows, version 17 (SPSS, Chicago, IL) to perform both descriptive and analytical statistical analysis. Multiple logistic regression models were used to 1) compare Thai and non-Thai youth with respect to outcome variables - and also in terms of factors associated with the main outcome variables and 2) compare out-of-school youth who attended the NFEC with those who did not - both in respect to their sexual behavior and in respect to their HIV testing behavior.

Ethical considerations

This study received ethical clearance from the Human Experimentation Committee of the Research Institute for Health Sciences, Chiang Mai University. Informed consent was obtained from all participants and the guardians of participants aged 15-17 years prior to participation.

RESULTS

Participant characteristics

Nine hundreds twenty-four participants were included in the study, of whom 424 (45.9%) were Thai and 500 (54.1%) were non-Thai. Fifty-two percent were

female and 52.3% were aged 20-24 years. Eighty-two percent were attending programs at the NFEC, 75.4% were employed and 68.6% lived with parents or relatives or at their worksite.

Fifty-seven percent had used alcohol and 25.9% had smoked tobacco in the past year. Significantly more Thai than non-Thai youth had ever drunk alcohol [Crude odds ratio (OR)=1.89; 95% CI: 1.44-2.48; p<0.001], had drunk alcohol more than once a week (OR=1.77; 95% CI: 1.10-2.86; p=0.018), and had participated in binge drinking (> 5 drinks at a time) (OR=2.11; 95% CI: 1.69-2.63; p< 0.001). Significantly more Thai than non-Thai youth had ever smoked (OR=2.60; 95% CI: 1.91-3.53; p< 0.001) and had smoked at least 6 cigarettes per day [6-10 cigarettes per day: OR=2.68; 95% CI: 1.10-6.53; p< 0.027; > 10 cigarettes per day: OR: 2.96; CI: 1.09-7.96; p< 0.027] (Table 1).

Overall, 57.7% of participants reported ever having sex (60.4% for Thai; 55.4% for non-Thai), of whom 87.6% were aged ≥ 15 years at their first sexual experience. Seventy-five percent did not use condoms consistently, 50.3% had at least 2 sexual partners in their life and 23.1% had previously been pregnant or made someone pregnant. Thai participants were significantly more likely to have had a history of at least 2 sexual partners. (OR=3.19; 95% CI: 2.21-4.61; p< 0.001), an early sexual debut (OR=5.52; CI: 2.71-11.25) and consistent condom use (OR=1.52; 95% CI: 1.00-2.33; p=0.047). Seventeen point six percent of participants reported ever having had an HIV test; 24.6% of those who had previously had sex reported ever having an HIV test. There was no significant difference in the proportions of participants who had ever had an HIV test between Thai and non-Thai participants (Table 1).

Sexual behavior

Factors associated with ever having sex. Table 2 displays factors associated with ever having sex. For all our participants, Thai participants were significantly more likely to have had sex than non-Thai participants. [Adjusted odds ratio (AOR)=2.33; 95% CI: 1.56-3.49; p<0.001]. Participants who attended the NFEC were significantly more likely to have ever had sex than those who did not attend the NFEC (AOR=2.51; 95% CI: 1.40-4.51; p=0.002).

Among Thai participants, having ever had sex was significantly associated with being aged 20-24 years (AOR=2.48; 95% CI: 1.48-4.15; p=0.001), with being employed (AOR=1.86; 95% CI: 1.11-3.12; p=0.018), with ever having drunk alcohol (AOR=3.01; 95% CI: 1.75-5.17; p<0.001) and with having smoked tobacco in the past year (AOR=2.77; 95% CI: 1.48-5.18; p=0.001).

For non-Thai participants, having ever had sex was significantly associated with being aged 20-24 years (AOR: 3.68; 95% CI: 2.17-6.21; p<0.001), attending a NFEC (AOR: 2.48; 95% CI: 1.23-4.99; p=0.011) and living alone (AOR: 2.89; 95% CI: 1.35-6.14; p=0.006).

Factors associated with having a history of two or more sexual partners. Among all participants, males (AOR=2.27; 95% 95% CI: 1.39-3.70; p=0.001), those aged 20-24 years (AOR=1.64; 95% CI: 1.00-2.69; p=0.049) and those having drunk alcohol in the past year (AOR=3.43; 95% CI: 2.03-5.78; p<0.001) were more likely to have a larger number of sexual partners. Thai participants who did not attend an NFEC were significantly more likely than non-Thai participants to have a history of 2 or more sexual partners (AOR=2.31; 95% CI: 1.37-3.88; p=0.002) and the same was true for Thai participants enrolled in a NFEC (AOR=2.61; 95% CI: 1.37-4.96; p=0.003).

Table 1
Socio-demographic and behavioral characteristics of study participants.

Variable	Thai (*n*=424) No. (%)	Non-Thai (*n*=500) No. (%)	Total (*n*=924) No. (%)	Crude odds ratio (95% CI)	*p*-value
Gender					
Male	216 (50.9)	232 (46.4)	448 (48.5)	1.00	
Female	208 (49.1)	268 (53.6)	476 (51.5)	0.83 (0.64-1.08)	0.169
Age in years					
15-19	236 (55.7)	180 (36.0)	416 (45.0)	1.00	
20-24	172 (40.6)	311 (62.2)	483 (52.3)	0.42 (0.32-0.55)	<0.001
Missing	16 (3.8)	9 (1.8)	25 (2.7)		
Median (IQR)	19 (17-21)	21 (18-23)	20 (18-22)		
Living situation					
Live with parent(s)/relative(s)	210 (49.5)	159 (31.8)	369 (39.9)	1.00	
Live with employer(s)	151 (35.6)	114 (22.8)	265 (28.7)	1.00 (0.72-1.37)	0.986
Live with friend(s)	29 (6.8)	42 (8.4)	71 (7.7)	0.52 (0.31-0.87)	0.013
Live alone	21 (5.0)	56 (11.2)	77 (8.3)	0.28 (0.16-0.48)	<0.001
Live with boy/girlfriend or loved one	13 (3.1)	129 (25.8)	142 (15.4)	0.07 (0.04-0.14)	<0.001
Attending a non-formal education center					
No	28 (6.6)	136 (27.2)	164 (17.7)	1.00	
Yes	396 (93.4)	364 (72.8)	760 (82.3)	5.28 (3.43-8.13)	<0.001
Employment with income					
No	196 (46.2)	31 (6.2)	227 (24.6)	1.00	
Yes	228 (53.8)	469 (93.8)	697 (75.4)	0.07 (0.05-0.11)	<0.001
Have you drunk alcohol in the past year?					
No	138 (32.5)	240 (48.0)	378 (40.9)	1.00	
Yes	276 (65.1)	253 (50.6)	529 (57.3)	1.89 (1.44-2.48)	<0.001
Missing	10 (2.4)	7 (1.4)	17 (1.8)	N/A	
How often do you drink alcohol?					
Less than once a week	173 (62.7)	181 (71.5)	354 (66.9)	1.00	
Once a week	45 (16.3)	38 (15.0)	83 (15.7)	1.23 (0.76-2.00)	0.381
More than once a week	56 (20.3)	33 (13.0)	89 (16.8)	1.77 (1.10-2.86)	0.018
Missing	2 (0.7)	1 (0.4)	3 (0.6)	N/A	
How many drinks do you usually have at one time?					
1-2	60 (21.7)	102 (40.3)	162 (30.6)	1.00	
3-5	58 (21.0)	90 (35.6)	148 (28.0)	1.09 (0.69-1.73)	0.697
>5	152 (55.1)	58 (22.9)	210 (39.7)	2.11 (1.69-2.63)	<0.001
Missing	6 (2.2)	3 (1.2)	9 (1.7)	N/A	
Have you smoked in the past year ?					
No	255 (60.1)	394 (78.8)	649 (70.2)	1.00	
Yes	150 (35.4)	89 (17.8)	239 (25.9)	2.60 (1.91-3.53)	<0.001
Missing	19 (4.5)	17 (3.4)	36 (3.9)	N/A	
How many cigarettes per day do you smoke?					
1 or occasional	50 (33.3)	37 (41.6)	87 (36.4)	1.00	
1-5	43 (28.7)	38 (42.7)	81 (33.9)	0.83 (0.45-1.54)	0.568
6-10	29 (19.3)	8 (9.0)	37 (15.5)	2.68 (1.10-6.53)	0.027
>10	24 (16.0)	6 (6.7)	30 (12.6)	2.96 (1.09-7.96)	0.027
Missing	4 (2.7)	0 (0.0)	4 (1.7)	N/A	

Table 1 (Continued).

Variable	Thai (*n*=424) No. (%)	Non-Thai (*n*=500) No. (%)	Total (*n*=924) No. (%)	Crude odds ratio (95% CI)	*p*-value
Have you used drugs in past year?					
No	369 (87.0)	122 (24.4)	491 (53.1)	1.00	
Yes	26 (6.1)	7 (1.4)	33 (3.6)	1.22 (0.52-2.90)	0.639
Missing	29 (6.8)	371 (74.2)	400 (43.3)	N/A	
Have you ever had sex?					
No	168 (39.6)	223 (44.6)	391 (42.9)	1.00	
Yes	256 (60.4)	277 (55.4)	533 (57.7)	1.22 (0.94-1.59)	0.127
Have you ever been tested for HIV?					
No	324 (76.4)	403 (80.6)	727 (78.7)	1.00	
Yes	80 (18.9)	83 (16.6)	163 (17.6)	1.16 (0.83-1.63)	0.367
Missing	20 (4.7)	14 (2.8)	34 (3.7)	N/A	
Have you ever been tested for HIV?[a]					
No	175 (68.4)	214 (77.3)	389 (73.0)	1.00	
Yes	71 (27.7)	60 (21.7)	131 (24.6)	1.38 (0.93-2.06)	0.104
Missing	10 (3.9)	3 (1.1)	13 (2.4)		
Number of sexual partners in life time[a]					
1	74 (28.9)	162 (58.5)	236 (44.3)	1.00	
≥ 2	159 (62.1)	109 (39.4)	268 (50.3)	3.19 (2.21-4.61)	<0.001
Missing	23 (9.0)	6 (2.2)	29 (5.4)	N/A	
Age of sexual debut in years[a]					
≥ 15	204 (79.7)	262 (94.6)	466 (87.6)	1.00	
< 15	43 (16.8)	10 (3.6)	53 (9.9)	5.52 (2.71-11.25)	<0.001
Missing	9 (3.5)	5 (1.8)	14 (2.6)	N/A	
Have you ever been pregnant or made someone pregnant?[a]					
No	160 (62.5)	208 (75.1)	368 (69.0)	1.00	
Yes	66 (25.8)	57 (20.6)	123 (23.1)	1.50 (0.99-2.26)	0.050
Missing	30 (11.7)	12 (4.3)	42 (7.9)	N/A	
Have you ever had an abortion or had a partner abort?[a]					
No	58 (87.9)	52 (91.2)	110 (89.4)	1.00	
Yes	8 (12.1)	4 (7.0)	12 (9.8)	1.79 (0.51-6.30)	0.358
Missing	0 (0.0)	1 (1.8)	1 (0.8)	N/A	
Have you used condoms consistently?[a]					
No	180 (70.3)	222 (80.1)	402 (75.4)	1.00	
Yes	62 (24.2)	50 (18.1)	112 (21.0)	1.52 (1.00-2.33)	0.047
Missing	14 (5.5)	5 (1.8)	19 (3.6)	N/A	

IQR, interquartile range; [a]data restricted to the subgroup of sexually experienced youth; 95% CI: 95% confidence interval.

Among Thai participants, those who had ever drunk alcohol (AOR=3.85; 95% CI: 1.62-9.15; *p*=0.002) and those who had smoked cigarettes in the past year (AOR=3.53; 95% CI: 1.40-8.85; *p*=0.007) were more likely to have a larger number of lifetime sexual partners.

Among non-Thai participants, males (AOR=2.31; 95% CI: 1.22-4.40; *p*=0.010), those who attended a NFEC (AOR=2.85;

Table 2
Multivariate analysis of factors associated with ever having had sex.

Independent variables	Thai (*n*=424) Adjusted odds ratio (95% CI)	Non-Thai (*n*=500) Adjusted odds ratio (95% CI)	Total Adjusted odds ratio (95% CI)
Gender			
Male	1	1	1
Female	1.34 (0.78-2.31)	0.58 (0.32-1.04)	0.89 (0.61-1.31)
Age in years			
15-19	1	1	1
20-24	2.48 (1.48-4.15)[b]	3.68 (2.17-6.21)[c]	2.99 (2.09-4.29)[c]
Living situation			
Live with parent(s)/relative(s)	1	1	
Live with employer(s)	0.68 (0.39-1.17)	1.49 (0.78-2.83)	0.99 (0.66-1.48)
Live with friend(s)	0.51 (0.18-1.39)	1.22 (0.52-2.86)	0.85 (0.45-1.59)
Live alone	0.63 (0.22-1.80)	2.89 (1.35-6.14)[b]	1.68 (0.93-3.06)
Live with boy/girlfriend or loved one[d]	N/A	N/A	N/A
Attending a non-formal education center			
No	1	1	1
Yes	3.25 (0.96-10.92)	2.48 (1.23-4.99)[a]	2.51 (1.40-4.51)[b]
Employment with income			
No	1	1	1
Yes	1.86 (1.11-3.12)[a]	0.60 (0.22-1.60)	1.35 (0.87-2.10)
Have you drunk alcohol in the past year?			
No	1	1	1
Yes	3.01 (1.75-5.17)[c]	5.48 (3.14-9.54)[c]	4.48 (3.08-6.52)[c]
Have you smoked in the past year?			
No	1	1	1
Yes	2.77 (1.48-5.18)[b]	1.37 (0.67-2.78)	1.91 (1.20-3.02)[b]
Ethnicity			
Non-Thai			1
Thai			2.33 (1.56-3.49)[c]

[a]$p < 0.05$; [b]$p < 0.01$; [c]$p < 0.001$; N/A, non applicable. [d]Nearly all those who lived with a boyfriend/girlfriend had sex so the AOR was not calculated.
95% CI, 95% confidence interval.

95% CI: 1.42-5.69; p=0.003) and those who had drunk alcohol during the past year (AOR=2.81; 95% CI: 1.41-5.58; p=0.003) were significantly more likely to have a history of at least two sexual partners (Table 3).

Factors associated with consistent use of condoms. Overall, there was no significant difference in consistency of condom use between Thai and non-Thai participants. (AOR=0.62; 95% CI: 0.35-1.08; p=0.095). Participants who attended a NFEC (AOR=3.48; 95% CI: 1.35-8.96; p=0.010) were more likely to use condoms more consistently. Participants who reported living with a boyfriend or a girlfriend were less likely to use a condom consistently (AOR=0.34; 95% CI: 0.14-0.81). Participants overall aged 15-19 years were significantly more likely to use condoms consistently than those aged 20-24 years

Table 3
Multivariate analysis of factors associated with two or more sexual partners in a lifetime.

Independent variables	Thai (*n*=424) Adjusted odds ratio (95% CI)	Non-Thai (*n*=500) Adjusted odds ratio (95% CI)	Total Adjusted odds ratio (95% CI)
Gender			
Male	1.69 (0.74-3.85)	2.31 (1.22-4.40)[a]	2.27 (1.39-3.70)[b]
Female	1	1	1
Age in years			
15-19	1	1	1
20-24	1.90 (0.94-3.85)	1.56 (0.72-3.35)	1.64 (1.00-2.69)[a]
Living situation			
Live with parent(s)/relative(s)	1	1	1
Live with employer(s)	1.22 (0.57-2.65)	0.76 (0.30-1.87)	0.86 (0.49-1.50)
Live with friend(s)	0.39 (0.06-2.47)	1.71 (0.46-6.37)	1.09 (0.41-2.86)
Live alone	2.56 (0.44-14.92)	2.00 (0.73-5.45)	2.17 (0.94-5.02)
Live with boy/girlfriend or loved one	0.15 (0.01-1.57)	0.55 (0.24-1.28)	0.55 (0.27-1.12)
Attending a non-formal education center			
No	1	1	1
Yes	0.56 (0.07-4.47)	2.85 (1.42-5.69)[b]	2.61 (1.37-4.96)[b]
Employment with income			
No	1	1	1
Yes	0.58 (0.27-1.22)	1.51 (0.39-5.83)	0.83 (0.45-1.50)
Have you drunk alcohol in the past year?			
No	1	1	1
Yes	3.85 (1.62-9.15)[b]	2.81 (1.41-5.58)[b]	3.43 (2.03-5.78)[c]
Have you smoked in the past year?			
No	1	1	1
Yes	3.53 (1.40-8.85)[b]	0.76 (0.38-1.54)	1.46 (0.86-2.49)
Ethnicity			
Non-Thai			1
Thai			2.31 (1.37-3.88)[c]

[a]$p < 0.05$; [b]$p < 0.01$; [c]$p < 0.001$; 95% CI, 95% confidence interval.

(AOR=1.74; 95% CI: 1.06-2.85; p=0.026).

Among Thai participants, none of those who did not attend a NFEC had used condoms consistently. Among non-Thai participants, those who attended NFEC were more likely to use a condom consistently (AOR=2.87; 95% CI: 1.07-2.68) (Table 4).

Factors associated with ever having had an HIV test. Factors among all participants significantly associated with ever having had an HIV test were being aged 20-24 years (AOR=1.94; 95% CI: 1.27-2.96; p=0.002), having ever had sex (AOR=2.70; 95% CI: 1.67-4.38, p<0.001) and having ever drunk alcohol (AOR=1.60; 95% CI: 1.03-2.51; p=0.037). Among Thai participants, the same factors were also significantly associated with ever having had an HIV test (aged 20-24 years: AOR=2.40; 95% CI: 1.34-4.29; p=0.003; ever had sex: AOR=6.01; 95% CI: 2.61-13.81; p<0.001). Among non-Thai participants, having

Table 4
Multivariate analysis of factors associated with consistent condom use.

Independent variables	Thai (*n*=424) Adjusted odds ratio (95% CI)	Non-Thai (*n*=500) Adjusted odds ratio (95% CI)	Total Adjusted odds ratio (95% CI)
Gender			
Male	1	1	1
Female	0.93 (0.42-2.08)	0.87 (0.40-1.91)	0.91 (0.53-1.57)
Age in years			
15-19	1.57 (0.83-2.98)	1.77 (0.80-3.90)	1.74 (1.06-2.85)[a]
20-24	1	1	1
Living situation			
Live with parent(s)/relative(s)	1	1	1
Live with employer(s)	0.98 (0.50-1.90)	1.29 (0.48-3.44)	1.04 (0.61-1.79)
Live with friend(s)	0.53 (0.05-4.83)	1.59 (0.43-5.82)	1.08 (0.39-3.00)
Live alone	0.60 (0.12-3.06)	0.63 (0.20-1.98)	0.59 (0.24-1.46)
Live with boy/girlfriend or loved one	N/A	0.37 (0.13-1.02)	0.34 (0.14-0.81)[a]
Attending a non-formal education center			
No	1	1	1
Yes	N/A	2.87 (1.07-7.68)[a]	3.48 (1.35-8.96)[a]
Employment with income			
No	1	1	1
Yes	0.83 (0.43-1.57)	0.85 (0.21-3.48)	0.88 (0.50-1.56)
Have you drunk alcohol in the past year?			
No	1	1	
Yes	1.92 (0.70-5.24)	0.92 (0.40-2.11)	1.29 (0.70-2.38)
Have you smoked in the past year?			
No	1	1	1
Yes	1.27 (0.55-2.90)	1.41 (0.60-3.29)	1.40 (0.78-2.49)
Ethnicity			
Non-Thai			1
Thai			0.62 (0.35-1.08)

[a]$p < 0.05$; N/A, Not applicable; 95% CI, 95% confidence interval.
In the places marked N/A, the model did not converge due to the fact that all the participants who did not attend a non-formal education center stated they did not use condoms.

ever drunk alcohol was significantly associated with having ever had an HIV test (AOR=2.08; 95% CI: 1.15-3.77; p=0.015) (Table 5).

DISCUSSION

In the current study we evaluated sexual risk behavior among out-of-school youth aged 15-24 years in Chiang Mai City, Thailand. Our findings show a high risk of contracting HIV and sexually transmitted infections among study participants and agree with those of previous studies among unmarried Thai youth in Northern Thailand (Tangmunkongvorakul *et al*, 2010; Musumari *et al*, 2016). In Thailand, despite the availability of sexual and reproductive health services, out of school young people have not been reached effectively (Thai National AIDS Committee, 2014). Effective strategies

Table 5
Multivariate analysis of factors associated with ever having had an HIV test sample.

Independent variables	Thai (*n*=424) Adjusted odds ratio (95% CI)	Non-Thai (*n*=500) Adjusted odds ratio (95% CI)	Total Adjusted odds ratio (95% CI)
Gender			
Male	1	1	1
Female	1.11 (0.57-2.18)	1.31 (0.74-2.34)	1.24 (0.81-1.88)
Age in years			
15-19	1	1	1
20-24	2.40 (1.34-4.29)[b]	1.68 (0.90-3.13)	1.94 (1.27-2.96)[b]
Living situation			
Live with parent(s)/relative(s)	1	1	
Live with employer(s)	0.87 (0.47-1.60)	0.84 (0.39-1.80)	0.84 (0.52-1.33)
Live with friend(s)	0.49 (0.09-2.55)	0.77 (0.26-2.27)	0.70 (0.29-1.68)
Live alone	2.78 (0.89-8.73)	1.63 (0.73-3.61)	1.70 (0.91-3.19)
Live with boy/girlfriend or loved one	2.66 (0.20-35.16)	1.01 (0.46-2.20)	0.81 (0.42-1.55)
Attending a non-formal education center			
No	1	1	1
Yes	24.41 (1.30-458.31)[a]	1.35 (0.73-2.50)	1.69 (0.95-3.02)
Employment with income			
No	1	1	1
Yes	1.23 (0.67-2.25)	1.67 (0.45-6.24)	1.34 (0.80-2.23)
Have you drunk alcohol in the past year?			
No	1	1	
Yes	1.06 (0.50-2.23)	2.08 (1.15-3.77)[a]	1.60 (1.03-2.51)[a]
Have you smoked in the past year?			
No	1	1	1
Yes	0.74 (0.35-1.54)	0.98 (0.50-1.95)	0.88 (0.54-1.42)
Have you ever had sex?			
No	1	1	1
Yes	6.01 (2.61-13.81)[c]	1.57 (0.81-3.02)	2.70 (1.67-4.38)[c]
Ethnicity			
Non-Thai			1
Thai			1.22 (0.79-1.91)

[a]$p < 0.05$; [b]$p < 0.01$; [c]$p < 0.001$; 95% CI, 95% confidence interval.

for reaching this population need to be developed and studied.

The cause of finding more risky sexual behavior among Thai participants than non-Thai participants is unclear and needs further study. This could be due to poorer parenting and participation in other behavior increasing risk, such as alcohol consumption. A previous study from Chiang Mai found most out-of-school Thai youth came from the lowest socio-economic background (Tangmunkongvorakul *et al*, 2010). They had less educated parents, a lower income, were more likely to come from a home affected by separation, divorce or death, and had a higher prevalence of risky sexual behavior than youths enrolled in schools or universities

(Tangmunkongvorakul *et al*, 2012a,b).

We postulate the non-Thai participants in our study, who were mainly migrant workers, might have higher goals for education, regarding the NFEC as a place to meet their educational goals. People with higher goals for education might have different sexual behavior. Future studies are needed to clarify this.

Similar to a previous study among out-of-school youth in Chiang Mai (Tangmunkongvorakul *et al*, 2010), male participants in our study were more likely to report a larger number of lifetime sexual partners than female participants. This is true among non-Thai participants and for the total group. Alcohol consumption was also significantly associated with risky sexual behavior among both Thai and non-Thai participants. The impact of alcohol consumption on risky sexual behaviors has been extensively reported in the literature (Halpern-Felsher *et al*, 1996; Kittisuksathit and Guest, 2007; Liu *et al*, 2006; Rongkavilit *et al*, 2007; Mulu *et al*, 2014). A study among students from Ethiopia found frequent consumption of alcohol was significantly associated with ever having had sex and with having multiple sexual partners (Mulu *et al*, 2014). In a study from northern Thailand among vocational students sexual initiation was associated with alcohol consumption at any age (Liu *et al*, 2006). Another study from Thailand found alcohol consumption was perceived by youth to cause people to overcome inhibitions caused by traditional and religious norms and be more likely to engage in risky sexual behavior (Kittisuksathit and Guest, 2007). Unlike other similar studies in Thailand (Thato *et al*, 2003; Khumsaen and Gary, 2009), consumption of alcohol in our study was not significantly positively or negatively associated with consistent condom use among either Thais or non-Thai participants.

Thai participants in our study who attended the NFEC were significantly less likely to engage in risky sexual behavior than those who did not. This difference needs further exploration.

Thai participants who attended a NFEC were more likely to have had a previous HIV test than those who did not. This difference was not seen among non-Thai participants. The non-formal education program provides health education, including about HIV testing. This may explain why Thai participants who attended a NFEC were more likely to have been tested but does not explain the disparity with non-Thai participants. There may be unknown barriers to testing in this population. This needs further exploration.

Although Thai participants were more likely to have risky sexual behavior than non-Thai participants, both had high prevalences of risky behavior and interventions need to target both groups. Interventions need to improve condom use and warn about the risks of alcohol use. The NFECs may serve as venues for interventions. However, for Thai and non-Thai youth who do not attend a NFEC, other interventions need to be developed and be accessible to those who work. These interventions may also include encouraging attending a NFEC in order to facilitate access to future interventions.

This study had a number of limitations. We used convenience sampling to recruit participants. Therefore, the sample may not represent the intended study population. Eighty-three percent of non-Thai participants did not attend a NFEC making it not representative or comparable to other groups. The cross-sectional design of the study prohibits determining

causality and trends. There may also have been other factors not controlled for in this study.

In summary Thai participants in this study were more likely to have risky sexual behavior than non-Thai participants, but both groups had a high prevalence of risky sexual behavior. The factors we found to be associated with risky sexual behavior may inform intervention program development to reduce these risks among the study population.

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