FACTORS ASSOCIATED WITH THE DECISION TO HAVE HIV ANTIBODY TESTING AMONG THAI MEN WHO HAVE SEX WITH MEN

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Abstract. The aim of this study was to assess the factors associated with the decision to have HIV antibody testing among Thai men who have sex with men (MSM) during the previous 12 months. MSM were recruited by systematic sampling from the M-REACH membership registry. Variables collected were demographics, sexual behavior, health behavior, knowledge about HIV/AIDS prevention and attitudes about HIV antibody testing. Data were collected via a self-administered questionnaire and in-depth interviews. About one third of participants reported having HIV antibody testing during the previous 12 months. Of those, 65% were aged >24 years. Participants aged >24 years were significantly more likely to have HIV testing than those aged <24 yars (AOR=3.04, 95%CI: 1.12-8.28; p<0.005). Most participants exhibited a good knowledge and attitude (levels regarding HIV antibody testing and AIDS). Those with a good attitude level about HIV were more likely to have been tested than those with a poor attitude level (AOR=3.19; 95% CI: 1.24-8.22; p<0.005). A programs that improves attitude and knowledge levels about HIV testing need to be developed for MSM in Thailand to improve HIV antibody testing rates.

Keywords: men who have sex with men (MSM), HIV antibody testing, decision, Thai

INTRODUCTION

HIV antibody testing is an integral part of HIV/AIDS prevention and control programs worldwide. Early detection of HIV decreases the opportunity for transmission of the virus to uninfected persons and enables timely treatment to decrease mortality and morbidity (Thompson *et al*, 2010). HIV antibody testing is also the cornerstone of HIV prevention and control and can be linked to patient care (Kurth *et al*, 2011).

Men who have sex with men (MSM) have a significantly higher risk of contracting HIV infection than the general population in every region of the world (NACC, 2008). In Thailand, early cases of HIV/AIDS were detected primarily among MSM (USAID, 2008). During 2003-2005 the prevalence of HIV among MSM in Bangkok increased from 17% to 28%.

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There are several factors in Thailand that could lead to a resurgence in HIV/AIDS cases: awareness of HIV status is low and 80% HIV-positive MSM had never been tested or thought they were HIV-negative (USAID, 2010).

The Ministry of Health (MOH), Thailand, has developed a program for HIV antibody screening known as Voluntary Counseling and Testing (VCT) for MSM in 31 high priority provinces. The Center for Disease Control and Prevention (CDC) of the MOH, Thailand recommends HIV-negative MSM should be counseled and tested for HIV at least twice annually (BRCHBD, 2013). Khon Kaen is in northeastern Thailand and is one of four provinces now performing VCT using rapid HIV antibody testing. Data from the annual report (CCMU, 2013) of M-REACH, a non-government organization (NGO) specializing in sexually transmitted diseases (STDs) among MSM, co-funded by the US and Thai governments, show MSM have a significantly lower rate of HIV antibody testing than the rest of the Thai population, despite reporting similar rates of risk behavior. The HIV prevalence rate among MSM attending the Chatapadung STD clinic, Khon Kaen, Thailand was 5.5% in 2010 while the rate of HIV antibody testing was 15.0% at the same time (CCMU, 2013). To increase HIV antibody testing among MSM, factors influencing willingness to be tested need to be identified. Our study aimed to assess the factors associated with the decision to undergo HIV antibody testing among MSM in Khon Kaen, Thailand.

MATERIALS AND METHODS

Study site

This case-control study was conducted at a single M-REACH STD clinic in Khon Kaen Hospital, Thailand. Participants were enrolled with an informed consent. The study's protocol was approved by the Khon Kaen Hospital Ethics Committee for Human Research.

Participants and sampling

MSMs were recruited using systematic sampling in the Khon Kaen hospital M-REACH STD clinic during October-December 2013. Inclusion criteria were men aged ≥18 years, living and/or working in Khon Kaen at the time of the survey, who had self-reported oral/anal sex or mutual masturbation with another man during the previous 12 months who were willing to provide written informed consent. We used an eligibility screening form to assess whether these criteria were met. Participants were divided into cases and controls where cases were defined as MSM who had undergone HIV antibody testing during the previous 12 months and controls were defined as those who had not been tested during the same period. Sample size was calculated using the case-control study formula (Schlesselman, 1982). Using a significance level of 0.05, 90% power and a minimal difference of 10%, the recommended sample size was 80 participants (assuming a 1:1 case: control mix). This was increased by 20% to allow for non-response, giving a sample size of 96.

Data collection

We hypothesized factors influencing decisions to test for HIV could be categorized into 5 groups: demographic, sexual behavior, health behavior, knowledge about HIV/AIDS prevention and attitudes about HIV antibody testing. Demographic variables were: age, marital status, education level, income and occupation. Sexual behavior data collected were: number of times having sexual intercourse (SI) per week, number of partners per month,

condom use (always/not always), sexual identity and history of STD. Health behavior evaluated were: drug/alcohol use before SI, drug/hormonal injection and blood donation. The knowledge component examined: general knowledge about HIV infection, HIV antibody testing and AIDs. The attitude component consisted of: beliefs about susceptibility to and severity of HIV/AID, barriers to testing, such as limited access to testing facilities and limitations in services and other barriers to testing such as fear of needles.

Data were collected via a self-administered questionnaire. The outcome variable of interest was HIV antibody testing during the previous 12 months (yes/no). Potential risk factors were: (1) marital status, (2) education level, (3) income, (4) occupation, (5) number of times having of sexual intercourse (SI) per week, (6) number of sexual partners during the previous 3 months, (7) history of STDs, (8) condom use, (9) drug/alcohol use before SI, (10) drug/hormone injection, (11) knowledge about HIV antibody testing recommendations and risk factors for developing HIV infection and (12) attitudes about HIV antibody testing. An in-depth interview was conducted with ten randomly selected participants to provide more detail about the reason for their decision to have or not have HIV antibody testing and barriers to testing.

The participants were divided into two age groups: 18-24 years and ≥25 years. These age groups were chosen based on a previous study by the Thai CDC which found the lowest testing rate was among men aged 18-24 years (CDC, 2006). Sexual orientation was categorized into homosexual and bisexual. HIV antibody testing was divided into ever tested and tested during the preceding 5 years. Reasons for not having HIV antibody testing were also recorded. Participants selected reasons from a list and then were asked which reason was the main reason for not being tested during the preceding 12 months.

Statistical methods

Data analyses were performed using STATA software, version 11 (STATA, College Station, TX). Descriptive analyses were first performed to assess participant characteristics, with frequencies and percentages used to summarize all variables. Bivariate and multi-variable binary logistic regression models were used to obtain crude and adjusted odds ratios, respectively. Backward elimination was used to obtain the final multivariable binary logistic regression model with all coefficients having a significance level of $p < 0.05$ being included in the final model.

RESULTS

One hundred seven MSM attending the Chatapadung STD clinic were invited to participate in this study, of whom 100 provided information about HIV antibody testing during the previous 12 months (Table 1); the other 7 participants were excluded from the study because they did not provide a history of whether or not they had HIV antibody testing. Participants who reported having ≥1 lifetime sexual partner and reported having oral sex, anal sex, or both with a male partner were included in the analyses. Seventy-two point nine percent of participants completed less than a diploma level education and 97.2% were homosexual. The median age was 23 years (range 18-44, SD 11.7). Thirty-nine point three percent reported having sexual intercourse with a male partner more than 2 times per week, and 58.9% reported having anal and oral sex with more than 1 partner during the previous 3 months.

Table 1
Demographic and behavioral characteristics of participants (*N*=107).

Data	*n* (%)
1. Age	
≤24 years old	56 (52.33)
≥25 years old	51 (47.67)
2. Anti-HIV testing during the previous 12 months	
No	65 (60.75)
Yes	35 (32.71)
Unknown	7 (6.54)
3. Education level	
Less than diploma from college	78 (72.9)
Diploma (graduated from college) or higher	29 (27.10)
4. Income	
<10,000 Baht/month	80 (74.77)
≥10,000 Baht/month	24 (22.43)
Unknown	3 (2.80)
5. Marriage status/partner status	
Single	92 (85.98)
With a partner	15 (14.02)
6. Sexual orientation	
Homosexual	104 (97.20)
Bisexual	3 (2.80)
7. Number of times had sexual intercourse per week during the previous 3 months	
≤2	65 (60.75)
>2	42 (39.25)
8. Number of partners per month during the previous 3 months	
≤1	44 (63.56)
>1	63 (33.64)
9. Condom use	
Always	68 (63.55)
Sometimes	36 (33.64)
Never	3 (2.80)
10. Alcohol use before sexual intercourse	
No	52 (48.60)
Yes	55 (51.40)
11. History of injecting drug use or hormonal injection	
No	97 (90.65)
Yes	10 (9.35)
12. Blood donation	
No	64 (59.81)
Yes	41 (38.32)
Unknown	2 (1.87)

Table 1 (Continued).

Data	n (%)
13. History of sexually transmitted disease	
No	98 (91.59)
Yes	8 (7.48)
Unknown	1 (0.93)
14. Intention to test for HIV during the next 12 months	
No	22 (20.56)
Yes	71 (66.36)
Unknown	19 (13.08)
15. Knowledge level about HIV antibody testing and AIDS	
Poor (score ≤13)	39 (36.45)
Good (score >13)	68 (63.55)
16. Attitudes about HIV antibody testing and AIDS	
Poor (score ≤40)	35 (32.71)
Good (score >40)	72 (67.29)

Table 2

Reasons for decision to have or not have HIV antibody testing obtained from in-depth interview.

1 "I want to know my test results because I had sex with many partners and sometime I did not use a condom."

2. "My employer asked me to have an HIV test before employment. I did not want to have the a test myself."

3. "I did not want to know the test results, because if it were positive, I could not accept the results"

4. "I usually use condoms and have few sexual partners, so I did not think I would ever get an HIV infection."

5. "It is waste of time because if the test is positive, there is no cure."

Sixty-three point six percent reported always using condoms; 51.4% reported drug or alcohol use prior to sexual intercourse. Ten percent of participants had injected drugs or hormones during their lifetime. Seven point five percent had a history of a STD. Sixty-three point six percent of participants had a good knowledge level and 67.3% had a good attitude level about HIV antibody testing and AIDS. Thirty-two point seven percent of participants who reported having a history of HIV antibody testing during the previous 12 months. Sixty-six point four percent of participants intended to have HIV antibody testing during the next 12 months.

Of the 10 participants who had an in-depth interview, 5 had undergone HIV antibody testing during the previous 12 months. Of the 10 indepth interviewed participants, 8 said the main reason

Table 3
Univariate and multivariate logistic regression analysis of factors associated with HIV antibody testing.

Variables	Controls (65) n (%)	Cases (35) n (%)	Crude odds ratio (95% CI)	p-value	Adjusted odds ratio (95% CI)
Age in years					
≤24	43 (66.15)	13 (37.14)	1.00		1.00
>24	22 (33.85)	22 (65.86)	3.30 (1.29-8.55)	<0.001[a]	3.04 (1.12-8.28) (p=0.01)
Education					
Less than diploma	49 (75.38)	23 (65.71)	1.00		
Diploma or higher	16 (24.62)	12 (34.29)	1.59 (0.58-4.23)	0.30	-
Income in Baht/month					
<10,000	50 (78.12)	24 (72.73)	1.00		
≥10,000	14 (21.88)	9 (27.27)	1.33 (0.44-3.88)	0.55	-
Sexual orientation					
Homosexual	64 (98.46)	34 (97.14)	1.00		
Bisexual	1 (1.54)	1 (2.86)	1.88 (0.023-150)	0.65	-
Number of times having sexual intercourse/week					
<2	36 (84.90)	25 (74.1)	1.00		
≥2	29 (15.10)	10 (25.9)	0.49 (0.18-1.29)	0.11	-
Number of sexual partners per month					
≤1	40 (38.46)	18 (48.57)	1.00		
>1	25 (61.54)	17 (51.43)	1.51 (0.61-3.79)	0.32	-
Condom use					
Always	39 (60.94)	23 (67.65)	1.00		
Sometimes	25 (39.06)	11 (32.35)	1.34 (0.52-3.59)	0.51	-
Alcohol/ illicit drug use before sexual intercourse					
No	31 (47.69)	16 (45.71)	1.00		
Yes	34 (52.31)	19 (54.29)	1.30 (0.52-3.59)	0.52	-
Illicit drug/hormonal injection					
No	60 (92.30)	30 (85.71)	1.00		
Yes	5 (7.70)	5 (14.29)	2.00 (0.42-9.36)	0.29	-
Blood donation					
No	44 (68.75)	15 (42.85)	1.00		
Yes	20 (31.25)	20 (57.15)	2.93 (1.15-7.52)	0.01[a]	

Table 3 (Continued).

Variables	Controls (65) n (%)	Cases (35) n (%)	Crude odds ratio (95% CI)	p-value	Adjusted odds ratio (95% CI)
History of STD					
No	63 (98.44)	28 (80.00)	1.00		1.00
Yes	1 (1.56)	7 (20.00)	15.75 (1.83-720.6)	<0.001[b]	12.32 (1.53-530.22) (p=0.06)
Intention to have anti-HIV testing in the next 12 months					
No	18 (30.51)	2 (6.67)	1.00		
Yes	41 (69.41)	28 (93.33)	6.14 (1.28-58.5)	0.01[a]	-
Knowledge level about HIV testing and AIDS					
Poor (scores ≤13)	19 (29.23)	17 (48.57)	1.00	0.05	1.00
Good (scores >13)	46 (70.77)	18 (51.43)	2.29 (0.89-5.83)		2.89 (0.97-8.90) (p=0.06)
Attitudes level about HIV testing and AIDS					
Poor (scores ≤40)	29 (44.62)	6 (17.14)	1.00		1.00
Good (scores >40)	36 (55.38)	29 (82.86)	3.89 (1.33-12.89)	0.006[a]	3.19 (1.24-8.22) (p=0.01)

[a]p-value by chi-square test; [b]p-value by Fisher's exact test.

why they wanted testing was to find out their HIV states, 2 stated their employer required them to have an HIV antibody test. Of those who did not have an HIV antibody test, three reasons were identified. The most commonly given reason was that they did not want to know the test results. A second reason was that they believed they had no risk for acquiring HIV infection and the third reason was that it was a waste of time to have HIV antibody testing (Table 2).

On univariate analysis, factors associated with HIV antibody testing are shown in Table 3. The crude odd ratios were estimated for the association between candidate variables and HIV antibody testing during the previous 12 months. Participants aged 18-24 years were significantly less likely to have HIV antibody testing than those aged >24 years (OR=3.03; 95%CI: 1.12-8.55; p<0.05). MSM who reported previously donating blood were significantly more likely to have had HIV antibody testing (OR=2.93; 95%CI: 1.15-7.52; p<0.01). Participants with a history of a STD were significantly more likely to have had odds of HIV antibody testing (OR=15.75; 95%CI: 1.83-720.62; p<0.05). Participants with high attitude levels about HIV antibody testing and AIDS were significantly more likely to have had HIV antibody testing but their knowledge levles were not associated with having had HIV antibody testing (OR=2.29; 95%CI: 0.89-5.83; p<0.05).

On multiple logistic regression analyses (Table 3, last column), age, number of times having sexual intercourse during the previous week, number of partners during the previous three months, using illicit drugs/hormonal injections, having a history of a STD and knowledge and attitude levels about HIV antibody testing were all used in the final model. The adjusted odds ratios (AOR) for age, history of having a STD, and having a good attitude level were all significantly associated with having had HIV antibody testing. Blood donation was not included in the model because this variable was perfectly concordant/collinear with HIV antibody testing.

Multiple logistic regression analysis showed participants aged ≥24 years were more likely to have had HIV antibody testing than those aged <24 years (AOR=3.04; 95%CI: 1.12-8.28; $p<0.05$). There were statistically significant differences in HIV antibody testing in the previous 12 months between those who had and did not have a previous STD (AOR=12.32; 95%CI: 1.53-530.22; $p<0.05$). Participants who had a good attitude levels about HIV testing were more likely to have been tested than those with a poor attitude level (AOR=3.19; 95% CI: 1.24-8.22; $p<0.05$).

DISCUSSION

Thirty-five percent of participants in this study reported having HIV antibody testing during the previous 12 months. The highest rates of testing were found among homosexual participants. Men with a history of a STD or who had donated blood were significantly more likely to have been tested. The overall rate of testing during the previous 12 months among participants was similar to the rates of testing found in the general Thai popula-

tion (40%) (BRCHBD, 2013). In the past 5 years there has been an increase in the rate of HIV antibody testing among MSM in Thailand of nearly 10% (AVERT, 2013). In our study participants aged ≥24 years were significantly more likely to undergo HIV antibody testing than those aged <24 years. This finding is similar to a study from Thailand which found participants aged 15-24 years did not want to have HIV antibody testing because they were ashamed, worried about confidentiality or were dissatisfied with health care services (UNICEF, 2014). In the same study, the researchers discovered that patients aged <18 years needed parental consent for HIV antibody testing. The researchers concluded perental consent should not be required if the patient could give informed consent.

Although, our findings showed high rates of always using condoms, data from the Thai Red Cross found the majority of new HIV infections (85%) were among MSM (van Griensven *et al*, 2010). The rate of testing among younger participants in our study is consistent with the results from a study conducted in the United States that found many younger MSM had never undergone HIV antibody testing in their lifetime. This raises the question about whether it is younger age or less frequent HIV antibody testing that explains the lower rate of HIV testing among younger participants (Margolis *et al*, 2012).

Developments in HIV antibody testing technology, particularly in fourth-generation antigen/antibody combination assays to improve earlier detection of infection, and the potential availability of over-the-counter rapid self-testing, may help to improve access and acceptability of testing (Pandori *et al*, 2009).

A new campaign named "Test and Treat" was implemented worldwide aim-

ing to prevent widespread HIV infection (ONAP, 2011). The strategy of universal voluntary HIV couselling and antibody testing (VCT) for persons aged ≥15 years and immediate administration of antiretroviral therapy for those found to be positive could facilitate simple access to HIV antibody testing (Republic of Namibia, 2010). Currently, HIV antibody testing and treatment is available to MSM but is not broadly offered in Thailand because of universal health coverage services policies and practices. For example, if someone has universal health coverage at an institution outside Khon Kaen Province, they have to pay for HIV antibody testing at Khon Kaen Hospital. VCT for HIV using the rapid antibody test is limited in some locations. The test result may be given after a few days. When a person has a positive test result, they are labeled with a medical code that identifies them as having HIV infection, raising concerns about confidentiality because people can guess the meaning of the code.

In our study, respondents with a good attitude level were more likely to have had HIV testing, probably becuses they believed "early detection and treatment" is best. This finding is similar to a South African study that found participants who had not been tested for HIV had a significantly more negative attitude about HIV antibody testing than participants who had been tested previously (Kalichman and Simbayi, 2003).

Three were 3 main limitations of this study. First, participants were chosen from peaple who had attended a MSM STD clinic. Second, the sample size was limited, making it difficult to identify factors associated with HIV antibody testing. Third, all the participants were recruited from a single STDs clinic in Khon Kaen Province in northeastern Thailand; there-fore, our results are not representative of MSM thoughout Thailand or even within the province; only those attending such a clinic. Further studies are needed among populations of MSM in Thailand containing larger numbers of patients.

In conclusion, we identified factors associated with the decision to have HIV antibody testing among MSM who attended a STD clinic in Khon Kaen Province, Thailand. Those aged >24 years and those having good attitude levels were more likely to have had HIV antibody testing. Wanting to know their HIV status and employer mandatory HIV testing were identified as the main reasons for undergoing testing. Not wanting to know their HIV status and the perception of having no risk for contracting HIV infection were the most frequently reported reasons for not wanting to undergo HIV testing. Test results typically took 2-3 days to return. Many respondents stated testing caused them to waste time, also causing a barrier to testing. To enhance the rate of testing, VCT should be simple, inexpensive, quick and anonymous. M-REACH clinics should target younger MSM with poorer attitudes in order to improve HIV antibody testing rates.

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