

# Factors Associated with HIV Testing History and Returning for HIV Test Results Among Men Who have Sex with Men in Thailand

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**Abstract** We evaluated factors associated with HIV testing history and returning for HIV test results among 2,049 Thai men who have sex with men. Of men, 50.3% reported prior HIV testing and 24.9% returned for HIV test results. Factors associated with prior HIV testing were male sex work, older age, employed, living away from the family, insertive anal sex role, history of drug use and having heard of effective HIV/AIDS treatment. Factors associated with returning for HIV test results were male sex work, older age, lack of a family confidant, history of sexually transmitted infections, and testing HIV negative in this study.

**Keywords** Men who have sex with men · HIV/AIDS · HIV testing · Thailand

## Introduction

In the late 1980s Thailand was the first country in Asia to experience a major epidemic of HIV infection. Since then an estimated one million Thais have been infected with HIV, of who approximately 641,000 have died [1]. While the initial HIV epidemic was predominantly observed among heterosexuals, there are indications that men who have sex with men (MSM) have become increasingly affected in more recent years. In an earlier account from the current study we reported an increasing HIV prevalence among MSM attending venues in Bangkok from 17.3% in 2003 to 28.3% in 2005 [2].

HIV voluntary counseling and testing (VCT) is a cornerstone of HIV prevention and is also a vital point of entry into other HIV/AIDS services, such as HIV treatment and care and psychosocial and legal support. The sentinel surveillance in 2004 reported that 32.1% of Thai men and 36.0% of Thai women in the general population (age 15–49 years) had undergone HIV testing [3]. No data are available regarding the history of HIV testing in Thai MSM. This assessment was the only HIV surveillance that focused on MSM in three major cities of Thailand.

Previous research has identified barriers to accessing VCT services in MSM elsewhere [4]. Social discrimination and stigma, including social rejection and stereotypes, may prevent people from identifying themselves as MSM, or as a person at risk for HIV infection. If there are costs attached to VCT, some MSM may not be able or willing to pay for these services. In addition, MSM may mistakenly assume that they are not at risk for HIV infection and may not come forward for VCT. In a recent study of young MSM in the United States, 77% of those testing HIV-positive mistakenly believed that they were not infected, of which 59% also believed that they were at low or very low

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risk [5]. A study in the United Kingdom showed similar results: 41.2% of those who tested HIV-positive were not aware of their HIV status, and of these, 62.3% thought they were HIV-negative [6]. Another reason for not accessing VCT may be confusion about the difference between HIV and AIDS and lack of awareness about HIV and AIDS treatment. The terms HIV and AIDS have often been used interchangeably and people may think that an HIV diagnosis is tantamount to a death sentence. It is also often believed that treatment for HIV and AIDS is unaffordable and beyond reach of most people. These false beliefs may lead to reluctance to access VCT [7].

Optimizing VCT services for MSM in Thailand is important, particularly in the light of the recent HIV prevalence findings in this group. Knowledge of HIV status and counseling may help MSM to change high-risk behavior. For those testing HIV-positive, it may be a starting point for referral into treatment and care services. However, research in the Western world has shown that 12–50% of persons tested failed to return for their test results. Persons who failed to return were more likely to be young (under the age of 25), HIV-positive, or MSM [8].

In this report we evaluate demographic and behavioral factors associated with HIV testing history and returning for HIV test results among participants in a cross-sectional survey of HIV prevalence and risk behavior among MSM in Thailand in 2005. Understanding these factors may help public health efforts promoting HIV VCT and motivating MSM to return for their HIV test results.

## Methods

The methods of the current assessment have been described in detail previously [9]. Briefly, a modified version of venue-day-time sampling (VDTS) was used to recruit 2,049 Thai MSM (response rate 97.3%) in Bangkok, Chiang Mai, and Phuket between March and October 2005. There are four phases in VDTS: (1) venue identification and mapping, (2) counting of male venue attendees, (3) determining eligibility and willingness to participate, and (4) recruitment of participants. A total of 356 venues were identified, physically verified for existence and further described in terms of outward characteristics of clientele, volume of attendance, type of services, access, logistics, proprietor support, security, and safety. Based on this information, 113 venues (61 entertainments, 21 saunas, 22 public parks/areas and 9 others) were purposefully selected, who were then visited at different times and days of the week for data collection to capture a wide variety of attendees. Based on the HIV prevalence found in 2003 among MSM in Bangkok, sample size calculation determined the number to be enrolled in 2005 for each of the

groups in the three cities (estimated HIV prevalence among MSM in Bangkok 20.0%; other groups 15.0%, confidence interval  $\pm 5\%$ ). Volunteers from a local community-based organization for MSM, Rainbow Sky Association of Thailand, aided research staff in mapping of venues and recruitment of participants. At venues, trained peer-recruiters approached potential participants and after a brief explanation of the study, screened for eligibility using a short questionnaire. Eligibility criteria included: male sex; at least 15 years old; Thai national; resident of the study area; and having engaged in oral or anal sex with a man in the past 6 months. Participation was voluntary and anonymous. Incentives to participate in the current study included receiving an HIV test, condom and lubricants and information about HIV infection. Participants were compensated 350 Thai Baht (approximately \$10), for their time lost and travel costs to retrieve their HIV test results. Once verbal informed consent was obtained, palmtop computer-assisted self-interviews were used to collect demographic and behavioral data. Oral fluid specimens were collected using the OraSure device (OraSure Salivary Collection Device, OraSure Technologies Inc., Beaverton, Oregon, USA) for HIV testing. Samples were tested at a dilution ratio of 1:2 in single wells by an enzyme immunoassay (EIA) (Oral Fluid Vironostika<sup>®</sup> HIV Microelisa System, Organon Teknika Corp., Durham, NC, USA) and if reactive, confirmed with Western blot (OraSure<sup>®</sup> HIV-1 Western Blot; OraSure Technologies, Inc, Bethlehem, PA, USA). The assessment protocol was determined a surveillance activity by the US Centers for Disease Control and Prevention which, consequently, did not require an IRB review. It was reviewed and approved by the Ethical Review Committee of the Thailand Ministry of Public Health.

## Study Population, Study Variables and Statistical Analysis

For the purpose of the current analysis, men who were enrolled from locations where men congregate to socialize with other men and seek male sexual partners (e.g., bars, discos, saunas, parks or elsewhere) were classified as general MSM; men who were enrolled from male sex work venues (e.g., “go-go” bars and massage-parlors where male sex workers can be solicited) were classified as male sex workers (MSW) (note: since these venues were visited prior to opening to the general public, clients were not enrolled) and men who were recruited from venues where transgender men work or socialize (e.g., cabaret show settings and beauty salons) were classified as transgender (TG) (note: men at these venues were classified as TG if they were dressed like a woman). Upon collection of oral fluid, participants received an individual bar-coded card to

get their HIV test results. HIV test results were available to participants 7 days later at a mobile clinic at the enrollment venue or at a fixed clinic in the recruitment city for a maximum of 3 months. If oral fluid HIV-positive, participants were asked to provide a blood specimen for confirmation testing and a CD4 count and were referred for HIV treatment and care according to the Thai national guidelines.

Data collected in this study include demographic factors, socio-behavioral information and beliefs. Dichotomous items include presence of a friend or family confidant, 1 = yes, 0 = no; alcohol and drug use, 1 = ever, 0 = never; had a sexually transmitted infection (STI), 1 = ever, 0 = never; had an HIV test, 1 = ever, 0 = never. Five-point Likert scales were used to assess condom use, 1 = always to 5 = never; worrying about getting HIV or an STI, 1 = a great deal to 5 = not at all). Additional five-point scale items assessed HIV beliefs (“People with HIV infection usually look very sick” and “HIV infection is uncommon among MSM”), 1 = strongly agree to 5 = strongly disagree.

Chi-square was used to evaluate associations between categorical variables, and bivariate and multivariate logistic regression analysis was applied to evaluate associations with HIV testing history and returning for HIV test results, while adjusting for city, venue, day and time clusters. Variables with bivariate *P* values of <0.05 were evaluated for collinearity and if eligible, manually entered in multivariate analysis. Variables with *P* values > 0.05 in multivariate analysis were eliminated from the final backward selection multivariate model (SPSS 12.0 for Windows; SPSS Inc., Chicago, Illinois, USA and Stata/SE 10.0 for Windows; StataCorp LP., Texas, USA).

## Results

### Demographic and HIV Testing Characteristics

A total of 2,049 participants were recruited into the assessment: 949 (46.3%) from Bangkok, 572 (27.9%) from Chiangmai and 528 (25.8%) from Phuket; 1,001 (48.9%) were recruited from entertainment venues, 211 (10.3%) from saunas and 837 (40.8%) from public parks or elsewhere; 821 (40.1%) were classified as MSM, 754 (36.8%) as MSW and 474 (23.1%) as TG. The mean age was 24.8 years (Median = 23 years) and 86.2% had completed secondary education or more. The majority was employed (81.5%) and lived away from the family (66.1%). Of participants, 1,030 (50.3%) reported to have ever been tested for HIV infection. The mean time since the latest HIV test was 1.6 years (Median = 0.67 years). The mean number of HIV tests was 5.1 (Median = 2). A total of 511 (24.9%)

participants returned for their HIV test results in the current study. Of these, 88.6% returned to the mobile clinic and 11.4% to the fixed clinic. In Bangkok, 24.7% of participants returned for their HIV test results, in Chiang Mai 24.7% and in Phuket, 25.8%. Of MSM, 17.7% returned for their HIV test results, of MSW, 32.4% and of TG, 25.7%.

### History of HIV Testing

When asked where participants had ever been tested for HIV infection, 43.0% said in a public hospital, 30.5% in a private hospital, 14.0% in an anonymous clinic and 13.9% in an STD clinic. When asked for reasons why they had ever been tested for HIV infection, 12.0% said for job application, 10.6% for insurance application and 6.8% for military service. Of those tested, 93.6% said they had received their HIV test results, of whom 788 (81.7%) reported to be HIV-negative, 26 (2.7%) to be HIV-positive and 150 (15.6%) did not wish to disclose their HIV test result. The HIV prevalence among those who reported having been tested was 18.4%, while it was lower, 14.7% (*P* = 0.023), among those who had never been tested. It was 15.5% among those reporting to be HIV-negative (*n* = 788), 57.7% among those reporting to be HIV-positive (*n* = 26) and 28.0% among those who were not willing to disclose (*n* = 150) (Table 2).

In bivariate analysis, the percentage of participants with a history of HIV testing did not differ by recruitment city, educational level, sexual identity and self-reported history of STI (Table 1). Being classified as MSW (vs. MSM), older age ( $\geq 23$  years), being employed, living away from the family, male gender self-identification, insertive anal sex role position (vs. receptive), reporting more than 50 lifetime sexual partners (vs. <50 partners), always using condoms in the past 3 months, having a family confidant, and having ever used alcohol or drugs were significantly associated with a prior history of HIV testing. Disagreement with the statement that “people with HIV infection usually look very sick” and reporting ever “having heard of effective HIV/AIDS treatment in Thailand” were also significantly associated with a prior history of HIV testing.

In multivariate analysis, being classified as MSW, older age, being employed, living away from the family, insertive anal sex role position, having ever used drugs and having ever heard of effective HIV/AIDS treatment in Thailand were significantly and independently associated with a prior history of HIV testing (Table 1).

### Returning for HIV Test Results

The percentage of men returning for HIV test results did not differ by last HIV test result (would not disclose, positive, negative, did not get result and never tested)

**Table 1** History of HIV testing among a sample of 2,049 men who have sex with men (MSM) by selected demographic and behavioral characteristics—Thailand, 2005

| Characteristic   | Having a history of HIV testing |           |         | Bivariate       |             |          | Multivariate    |             |          |
|--|---------------------------------|-----------|---------|-----------------|-------------|----------|-----------------|-------------|----------|
|  | Tested (n)                      | Total (N) | n/N (%) | OR <sup>a</sup> | (95% CI)    | <i>P</i> | OR <sup>a</sup> | (95% CI)    | <i>P</i> |
| <b>Recruitment city</b>  |                                 |           |         |                 |             |          |                 |             |          |
| Phuket   | 254                             | 528       | (48.1)  | 1.00            | Referent    |          |                 |             |          |
| Chiangmai  | 292                             | 572       | (51.0)  | 1.13            | (0.73–1.74) | 0.595    |                 |             |          |
| Bangkok  | 484                             | 949       | (51.0)  | 1.12            | (0.77–1.63) | 0.541    |                 |             |          |
| <b>Subpopulation</b>   |                                 |           |         |                 |             |          |                 |             |          |
| MSM  | 356                             | 821       | (43.4)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| MSW  | 453                             | 754       | (60.1)  | 1.97            | (1.53–2.53) | <0.001   | 1.63            | (1.27–2.08) | <0.001   |
| TG   | 221                             | 474       | (46.6)  | 1.14            | (0.82–1.59) | 0.438    | 1.24            | (0.90–1.72) | 0.192    |
| <b>Age group (years)</b>   |                                 |           |         |                 |             |          |                 |             |          |
| 15–22  | 314                             | 850       | (36.9)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| 23–28  | 417                             | 750       | (55.6)  | 2.14            | (1.70–2.69) | <0.001   | 1.80            | (1.45–2.23) | <0.001   |
| ≥29  | 299                             | 449       | (66.6)  | 3.40            | (2.52–4.59) | <0.001   | 3.03            | (2.27–4.03) | <0.001   |
| <b>Education</b>   |                                 |           |         |                 |             |          |                 |             |          |
| Primary or less  | 137                             | 277       | (49.5)  | 1.00            | Referent    |          |                 |             |          |
| Secondary to vocational  | 675                             | 1352      | (49.9)  | 1.02            | (0.77–1.34) | 0.894    |                 |             |          |
| University   | 218                             | 420       | (51.9)  | 1.10            | (0.77–1.58) | 0.591    |                 |             |          |
| <b>Working status</b>  |                                 |           |         |                 |             |          |                 |             |          |
| Not employed   | 117                             | 379       | (30.9)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| Employed   | 913                             | 1670      | (54.7)  | 2.70            | (2.03–3.58) | <0.001   | 1.60            | (1.23–2.07) | <0.001   |
| <b>Living situation</b>  |                                 |           |         |                 |             |          |                 |             |          |
| Living with family   | 272                             | 694       | (39.2)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| Living away from the family  | 758                             | 1355      | (55.9)  | 1.97            | (1.56–2.48) | <0.001   | 1.52            | (1.22–1.90) | <0.001   |
| <b>Gender identity</b>   |                                 |           |         |                 |             |          |                 |             |          |
| Female   | 314                             | 683       | (46.0)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| Male   | 716                             | 1366      | (52.4)  | 1.29            | (1.02–1.65) | 0.035    |                 |             |          |
| <b>Sexual identity</b>   |                                 |           |         |                 |             |          |                 |             |          |
| Heterosexual   | 364                             | 751       | (48.5)  | 1.00            | Referent    |          |                 |             |          |
| Homosexual   | 501                             | 989       | (50.7)  | 1.09            | (0.86–1.38) | 0.463    |                 |             |          |
| Bisexual   | 165                             | 309       | (53.4)  | 1.22            | (0.93–1.59) | 0.145    |                 |             |          |
| <b>Usual anal sex role</b>   |                                 |           |         |                 |             |          |                 |             |          |
| Receptive  | 343                             | 776       | (44.2)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| Insertive  | 613                             | 1099      | (55.8)  | 1.59            | (1.27–2.00) | <0.001   | 1.35            | (1.06–1.71) | 0.014    |
| No anal sex  | 74                              | 174       | (42.5)  |                 | –           |          |                 | –           |          |
| <b>Total number of sexual partners in lifetime</b>   |                                 |           |         |                 |             |          |                 |             |          |
| 1–2  | 426                             | 872       | (48.9)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| 3–10   | 254                             | 522       | (48.7)  | 0.99            | (0.79–1.24) | 0.945    |                 |             |          |
| 11–50  | 200                             | 399       | (50.1)  | 1.05            | (0.83–1.33) | 0.668    |                 |             |          |
| >50  | 150                             | 256       | (58.6)  | 1.48            | (1.14–1.93) | 0.004    |                 |             |          |
| <b>Consistent condom use with all sexual intercourse partner(s) during the past 3 months</b> |                                 |           |         |                 |             |          |                 |             |          |
| Not always   | 368                             | 758       | (48.5)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| Always   | 473                             | 874       | (54.1)  | 1.25            | (1.05–1.49) | 0.013    |                 |             |          |
| No sexual intercourse partner  | 189                             | 417       | (45.3)  |                 | –           |          |                 |             |          |
| <b>Having a family confidant</b>   |                                 |           |         |                 |             |          |                 |             |          |
| No   | 331                             | 704       | (47.0)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| Yes  | 699                             | 1345      | (52.0)  | 1.22            | (1.02–1.45) | 0.027    |                 |             |          |

**Table 1** continued

| Characteristic  | Having a history of HIV testing |           |         | Bivariate       |             |          | Multivariate    |             |          |
|---|---------------------------------|-----------|---------|-----------------|-------------|----------|-----------------|-------------|----------|
|   | Tested (n)                      | Total (N) | n/N (%) | OR <sup>a</sup> | (95% CI)    | <i>P</i> | OR <sup>a</sup> | (95% CI)    | <i>P</i> |
| Drinking alcohol  |                                 |           |         |                 |             |          |                 |             |          |
| Never   | 37                              | 102       | (36.3)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| Ever  | 993                             | 1947      | (51.0)  | 1.83            | (1.24–2.70) | 0.002    |                 |             |          |
| Drug use  |                                 |           |         |                 |             |          |                 |             |          |
| Never   | 366                             | 826       | (44.3)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| Ever  | 664                             | 1223      | (54.3)  | 1.49            | (1.24–1.80) | <0.001   | 1.34            | (1.11–1.61) | 0.002    |
| History of self-reported STI                                |                                 |           |         |                 |             |          |                 |             |          |
| Never   | 374                             | 775       | (48.3)  | 1.00            | Referent    |          |                 |             |          |
| Ever  | 656                             | 1274      | (51.5)  | 1.14            | (0.94–1.39) | 0.196    |                 |             |          |
| Worry about getting STI in the future                       |                                 |           |         |                 |             |          |                 |             |          |
| Little to not at all  | 368                             | 732       | (50.3)  | 1.00            | Referent    |          |                 |             |          |
| Moderate to great deal                                      | 662                             | 1317      | (50.3)  | 1.00            | (0.81–1.23) | 0.998    |                 |             |          |
| Worry about getting HIV in the future                       |                                 |           |         |                 |             |          |                 |             |          |
| Little to not at all  | 382                             | 757       | (50.5)  | 1.00            | Referent    |          |                 |             |          |
| Moderate to great deal                                      | 648                             | 1292      | (50.2)  | 0.99            | (0.81–1.20) | 0.900    |                 |             |          |
| “People with HIV infection usually look very sick”          |                                 |           |         |                 |             |          |                 |             |          |
| Agree   | 629                             | 1315      | (47.8)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| Disagree  | 401                             | 734       | (54.6)  | 1.31            | (1.09–1.59) | 0.005    |                 |             |          |
| “HIV is not common among MSM”                               |                                 |           |         |                 |             |          |                 |             |          |
| Disagree  | 453                             | 923       | (49.1)  | 1.00            | Referent    |          |                 |             |          |
| Agree   | 577                             | 1126      | (51.2)  | 1.09            | (0.92–1.29) | 0.318    |                 |             |          |
| Heard of available effective HIV/AIDS treatment in Thailand |                                 |           |         |                 |             |          |                 |             |          |
| No  | 369                             | 844       | (43.7)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| Yes   | 661                             | 1205      | (54.9)  | 1.56            | (1.29–1.90) | <0.001   | 1.54            | (1.28–1.86) | <0.001   |

<sup>a</sup> Adjusted OR<sup>b</sup> Dropped out of the multivariate model

(Table 2). Of those who tested positive in the current study, 18.8% returned for HIV test results. The HIV prevalence among those who returned was 12.5%, significantly lower ( $P = 0.004$ ) than the prevalence among those who did not return for their results, 17.9%. Among those who returned, 8.9% received their first HIV-positive test result as part of the current study.

In bivariate analysis, being classified as MSW (vs. MSM), older age ( $\geq 29$  years), having completed primary education or less (vs. university), being currently employed, living away from the family, lacking a family or friend confidant, being worried about getting STI and HIV in the future, self-reported history of STI, and testing HIV-negative in the current study were significantly associated with returning for HIV test results (Table 2).

In multivariate analysis, being classified as MSW, older age, lacking a family confidant, self-reported history of STI, and testing HIV-negative in the current study were significantly and independently associated with returning for HIV test results (Table 2).

## Discussion

In the current study, approximately 50% of the men reported a history of prior HIV testing and about one-quarter returned for their HIV test results. The percentage with a history of prior HIV testing was higher than found in other studies and other populations in Thailand [3]. This may have been the result of MSM perceiving themselves to be at higher risk for HIV infection and therefore are more likely to seek HIV testing. In addition, MSW, a subcategory of MSM in this study, undergo regular HIV testing as part of HIV surveillance of the Thailand Ministry of Public Health [10]. Nevertheless, a majority of participants who reported a history of prior HIV testing had their HIV test done at public and private hospitals. The analysis presented in this paper shows that participants who were classified as MSW, who were older, employed, lived away from the family, had a history of drug use and had heard about the availability of effective HIV/AIDS treatments in Thailand were more likely to report a history of HIV testing. These

**Table 2** Returning for HIV test results among a sample of 2,049 men who have sex with men (MSM) by selected demographic and behavioral characteristics—Thailand, 2005

| Characteristic   | Returning for HIV test result |           |         | Bivariate       |             |          | Multivariate    |             |          |
|--|-------------------------------|-----------|---------|-----------------|-------------|----------|-----------------|-------------|----------|
|  | Return (n)                    | Total (N) | n/N (%) | OR <sup>a</sup> | (95% CI)    | <i>P</i> | OR <sup>a</sup> | (95% CI)    | <i>P</i> |
| <b>Recruitment city</b>  |                               |           |         |                 |             |          |                 |             |          |
| Chiangmai  | 141                           | 572       | (24.7)  | 1.00            | Referent    |          |                 |             |          |
| Bangkok  | 234                           | 949       | (24.7)  | 1.00            | (0.64–1.57) | 0.999    |                 |             |          |
| Phuket   | 136                           | 528       | (25.8)  | 1.06            | (0.63–1.78) | 0.824    |                 |             |          |
| <b>Subpopulation</b>   |                               |           |         |                 |             |          |                 |             |          |
| MSM  | 145                           | 821       | (17.7)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| MSW  | 244                           | 754       | (32.4)  | 2.23            | (1.52–3.28) | <0.001   | 2.35            | (1.60–3.43) | <0.001   |
| TG   | 122                           | 474       | (25.7)  | 1.62            | (0.90–2.92) | 0.111    | 1.71            | (0.96–3.03) | 0.067    |
| <b>Age group (years)</b>   |                               |           |         |                 |             |          |                 |             |          |
| 15–22  | 180                           | 850       | (21.2)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| 23–28  | 194                           | 750       | (25.9)  | 1.30            | (0.99–1.70) | 0.058    | 1.29            | (0.97–1.71) | 0.077    |
| ≥29  | 137                           | 449       | (30.5)  | 1.63            | (1.17–2.29) | 0.004    | 1.89            | (1.33–2.70) | <0.001   |
| <b>Education</b>   |                               |           |         |                 |             |          |                 |             |          |
| University   | 99                            | 420       | (23.6)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| Secondary to vocational  | 320                           | 1352      | (23.7)  | 1.01            | (0.74–1.37) | 0.973    |                 |             |          |
| Primary or less  | 92                            | 277       | (33.2)  | 1.61            | (1.08–2.41) | 0.020    |                 |             |          |
| <b>Working status</b>  |                               |           |         |                 |             |          |                 |             |          |
| Not employed   | 64                            | 379       | (16.9)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| Employed   | 447                           | 1670      | (26.8)  | 1.80            | (1.21–2.66) | 0.003    |                 |             |          |
| <b>Living situation</b>  |                               |           |         |                 |             |          |                 |             |          |
| Living with family   | 142                           | 694       | (20.5)  | 1.00            | Referent    |          | – <sup>b</sup>  |             |          |
| Living away from the family  | 369                           | 1355      | (27.2)  | 1.45            | (1.10–1.93) | 0.009    |                 |             |          |
| <b>Gender identity</b>   |                               |           |         |                 |             |          |                 |             |          |
| Male   | 329                           | 1366      | (24.1)  | 1.00            | Referent    |          |                 |             |          |
| Female   | 182                           | 683       | (26.6)  | 1.15            | (0.81–1.62) | 0.442    |                 |             |          |
| <b>Sexual identity</b>   |                               |           |         |                 |             |          |                 |             |          |
| Homosexual/gay   | 231                           | 989       | (23.4)  | 1.00            | Referent    |          |                 |             |          |
| Bisexual   | 73                            | 309       | (23.6)  | 1.02            | (0.74–1.40) | 0.928    |                 |             |          |
| Heterosexual   | 207                           | 751       | (27.6)  | 1.25            | (0.90–1.73) | 0.179    |                 |             |          |
| <b>Usual anal sex role</b>   |                               |           |         |                 |             |          |                 |             |          |
| Insertive  | 274                           | 1099      | (24.9)  | 1.00            | Referent    |          |                 |             |          |
| Receptive  | 197                           | 776       | (25.4)  | 1.03            | (0.73–1.43) | 0.887    |                 |             |          |
| No anal sex  | 40                            | 174       | (23.0)  |                 | –           |          |                 |             |          |
| <b>Total number of sexual partners in lifetime</b>   |                               |           |         |                 |             |          |                 |             |          |
| >50  | 58                            | 256       | (22.7)  | 1.00            | Referent    |          |                 |             |          |
| 11–50  | 111                           | 399       | (27.8)  | 1.32            | (0.95–1.83) | 0.104    |                 |             |          |
| 3–10   | 118                           | 522       | (22.6)  | 1.00            | (0.70–1.42) | 0.987    |                 |             |          |
| 1–2  | 224                           | 872       | (25.7)  | 1.18            | (0.84–1.67) | 0.347    |                 |             |          |
| <b>Consistent condom use with all sexual intercourse partner(s) during the past 3 months</b> |                               |           |         |                 |             |          |                 |             |          |
| Always   | 215                           | 874       | (24.6)  | 1.00            | Referent    |          |                 |             |          |
| Not always   | 197                           | 758       | (26.0)  | 1.08            | (0.87–1.34) | 0.504    |                 |             |          |
| No sexual intercourse partner  | 99                            | 417       | (23.7)  |                 | –           |          |                 |             |          |
| <b>Having a family confidant</b>   |                               |           |         |                 |             |          |                 |             |          |
| Yes  | 315                           | 1345      | (23.4)  | 1.00            | Referent    |          | 1.00            | Referent    |          |
| No   | 196                           | 704       | (27.8)  | 1.26            | (1.02–1.56) | 0.031    | 1.34            | (1.08–1.66) | 0.007    |

**Table 2** continued

| Characteristic  | Returning for HIV test result |           |         | Bivariate       |             |       | Multivariate    |             |       |
|---|-------------------------------|-----------|---------|-----------------|-------------|-------|-----------------|-------------|-------|
|   | Return (n)                    | Total (N) | n/N (%) | OR <sup>a</sup> | (95% CI)    | P     | OR <sup>a</sup> | (95% CI)    | P     |
| Having a friend confidant                                   |                               |           |         |                 |             |       |                 |             |       |
| Yes   | 411                           | 1723      | (23.9)  | 1.00            | Referent    |       | – <sup>b</sup>  |             |       |
| No  | 100                           | 326       | (30.7)  | 1.41            | (1.05–1.91) | 0.024 |                 |             |       |
| Drinking alcohol  |                               |           |         |                 |             |       |                 |             |       |
| Never   | 21                            | 102       | (20.6)  | 1.00            | Referent    |       |                 |             |       |
| Ever  | 490                           | 1947      | (25.2)  | 1.30            | (0.79–2.14) | 0.308 |                 |             |       |
| Drug use  |                               |           |         |                 |             |       |                 |             |       |
| Never   | 194                           | 826       | (23.5)  | 1.00            | Referent    |       |                 |             |       |
| Ever  | 317                           | 1223      | (25.9)  | 1.14            | (0.90–1.44) | 0.273 |                 |             |       |
| History of self-reported STI                                |                               |           |         |                 |             |       |                 |             |       |
| Never   | 166                           | 775       | (21.4)  | 1.00            | Referent    |       | 1.00            | Referent    |       |
| Ever  | 345                           | 1274      | (27.1)  | 1.36            | (1.10–1.69) | 0.005 | 1.35            | (1.10–1.65) | 0.004 |
| Worry about getting STI in the future                       |                               |           |         |                 |             |       |                 |             |       |
| Not at all to little  | 158                           | 732       | (21.6)  | 1.00            | Referent    |       | – <sup>b</sup>  |             |       |
| Moderate to great deal                                      | 353                           | 1317      | (26.8)  | 1.33            | (1.10–1.61) | 0.003 |                 |             |       |
| Worry about getting HIV in the future                       |                               |           |         |                 |             |       |                 |             |       |
| Not at all to little  | 167                           | 757       | (22.1)  | 1.00            | Referent    |       | – <sup>b</sup>  |             |       |
| Moderate to great deal                                      | 344                           | 1292      | (26.6)  | 1.28            | (1.06–1.56) | 0.012 |                 |             |       |
| “People with HIV infection usually look very sick”          |                               |           |         |                 |             |       |                 |             |       |
| Agree   | 313                           | 1315      | (23.8)  | 1.00            | Referent    |       |                 |             |       |
| Disagree  | 198                           | 734       | (27.0)  | 1.18            | (0.93–1.50) | 0.165 |                 |             |       |
| “HIV is NOT common among MSM”                               |                               |           |         |                 |             |       |                 |             |       |
| Disagree  | 228                           | 923       | (24.7)  | 1.00            | Referent    |       |                 |             |       |
| Agree   | 283                           | 1126      | (25.1)  | 1.02            | (0.84–1.25) | 0.818 |                 |             |       |
| Heard of available effective HIV/AIDS treatment in Thailand |                               |           |         |                 |             |       |                 |             |       |
| Yes   | 289                           | 1205      | (24.0)  | 1.00            | Referent    |       |                 |             |       |
| No  | 222                           | 844       | (26.3)  | 1.13            | (0.94–1.36) | 0.187 |                 |             |       |
| History of HIV testing                                      |                               |           |         |                 |             |       |                 |             |       |
| Never   | 247                           | 1019      | (24.2)  | 1.00            | Referent    |       |                 |             |       |
| Ever  | 264                           | 1030      | (25.6)  | 1.08            | (0.86–1.35) | 0.525 |                 |             |       |
| Last HIV test result  |                               |           |         |                 |             |       |                 |             |       |
| Would not disclose  | 33                            | 150       | (22.0)  | 1.00            | Referent    |       |                 |             |       |
| Positive  | 7                             | 26        | (26.9)  | 1.31            | (0.51–3.37) | 0.581 |                 |             |       |
| Negative  | 204                           | 788       | (25.9)  | 1.24            | (0.82–1.88) | 0.316 |                 |             |       |
| Did not get result  | 20                            | 60        | (30.3)  | 1.54            | (0.80–2.96) | 0.193 |                 |             |       |
| Never tested  | 247                           | 1019      | (24.2)  | –               |             |       |                 |             |       |
| HIV test result in this study                               |                               |           |         |                 |             |       |                 |             |       |
| Positive  | 64                            | 340       | (18.8)  | 1.00            | Referent    |       | 1.00            | Referent    |       |
| Negative  | 447                           | 1709      | (26.2)  | 1.53            | (1.11–2.10) | 0.009 | 1.65            | (1.20–2.28) | 0.002 |

<sup>a</sup> Adjusted OR<sup>b</sup> Dropped out of the multivariate model

results confirm findings from other studies [5, 6] showing an increased likelihood of HIV testing with increasing age, employment and living away from the family. MSW working at sex work venues in Bangkok, Chiang Mai and Phuket undergo regular HIV surveillance testing by the

Thailand Ministry of Public Health [10], which may explain the association between being classified as MSW and having a history of HIV testing. Pre-employment HIV screening is a common practice in Thailand, which may explain the association between HIV testing and

employment. Increased behavioral risk and knowledge of availability of effective treatments for HIV infection may provide additional motivation for MSM to seek HIV testing. Factors associated with absence of a history of HIV testing, such as younger age and being unemployed, can help to target those with a higher probability of never having been tested for HIV. Given the relatively low history of HIV testing in general, as is shown in our study, efforts should be undertaken to educate the MSM community at large about the importance and advantages of HIV testing.

That only one-quarter of participants returned for HIV test results may be disappointing, but this figure is comparable with returns seen in other venue-and-street based studies in the U.S. and elsewhere [11, 12]. During a similar assessment 2 years earlier, no mobile clinic was available to participants, and 5.4% of men returned to retrieve their HIV test results at a fixed clinic [2]. Positively, the addition of the mobile clinic to the current assessment was associated with a fivefold increase in returning for HIV test results. Our analysis shows that participants who returned for HIV test results were more likely to be classified as MSW, were older, and more likely to be HIV-negative in the current study. These results are similar as those seen in other studies, showing that persons who returned for their HIV test results were more often older, being sex workers, and HIV-negative [8, 11]. Remarkably, of the 340 men who tested HIV positive in the current study, only 18.8% returned for their HIV test results. This possibly means that a considerable proportion of HIV positive men goes undiagnosed, likely out of fear of being identified as HIV infected and the negative consequences that are often attached to it. However, some men may have not returned for their HIV test results since they already knew or assumed to know they were HIV-infected. In this respect it should be mentioned that of those who reported their HIV status as positive ( $n = 26$ ), only 15 (or 57.7%) went on to test HIV-positive in the current study. While this proportion may seem to be large, it needs to be pointed out that of the total number of people with a history of HIV testing, only 1.1% (11/1,030) incorrectly reported their status as HIV-positive. Since the oral fluid test we used is well established with high sensitivity and specificity, this discrepancy may be due to misunderstanding about the meaning of “positive” and “negative”, which may be associated with “good” and “bad”, respectively. It should also be noted that this percentage is based on a small number of subjects ( $n = 26$ ) of whom some misclassified themselves.

As with every study, there are some limitations to the research presented here. First, participants were recruited from venues where men go to meet other men. Thus, men who do not attend such venues were not included. These men may be at lower or higher risk for HIV infection and may have different levels of prior HIV testing. In this study

men were classified as MSM, MSW or TG based on their venue of enrollment, leaving open the possibility that some MSW were misclassified as general MSM, because they were enrolled at an entertainment venue. This, in turn, may have inflated the proportion of MSM returning for HIV test results, since MSW were more likely to return than MSM and TG. Given the relatively low proportion of MSM returning for HIV test results compared to MSW and TG, the effect of this type of misclassification probably has been small. Another bias may have resulted from our sample having been recruited from three largely urban areas of Thailand, and the demographic and risk behavior profiles of these men may be different from men residing in rural areas. Also, the use of peer-recruiters in our study may have caused some potential participants to refuse or may have biased responses of those fearing a breach of confidentiality. However, refusal to participate in our study was rare and peer-recruiters were specifically trained in issues related to confidentiality. Furthermore, behavioral data were collected using computer-assisted self-interviewing, which may have provided an additional sense of confidentiality among participants. Another issue to be considered when interpreting our results is that men were tested for HIV infection in a study setting, which may be different from a VCT or clinic setting. Hence, variables associated with returning for HIV test results in other settings may be different. Lastly, since this is a cross-sectional study, causal inferences about the time order of occurrence of variables are not possible (e.g., we cannot determine whether risk behavior occurred before or after HIV testing). Nevertheless, our study identified some important factors, such as younger age and classification as general MSM, being associated with not returning for HIV test results. Finally, the 75.1% non-return as observed in our study points at the need for and usefulness of HIV rapid testing technology, which is now widely available and should be used to increase the proportion of men receiving their HIV test results.

This paper shows that barriers to accessing VCT services as well as factors associated with not returning for HIV test results among Thai MSM are similar to those found among Western MSM. This finding suggests that successful programs used in the Western world to increase access to HIV VCT and returning for HIV test results may be adapted for MSM in Thailand and elsewhere.

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