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ORIGINAL PAPER

Sexual Partners and Condom Use of Migrant Workers in Thailand

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Abstract The objectives of this paper were to identify the types of sexual partners and condom use of migrant workers. Data for the study were drawn from a survey of 3,426 migrant workers in southern coastal and northern areas of Thailand conducted in 2004. Among sexually active men, 25% reported visiting a sex worker, 57% reported a regular partner, and 6% reported another non-regular partner in the last year. Reported condom use was high with sex workers (79% reported always use), but low with regular partners (4% ever use). Factors related to visiting sex workers included marital status (more visits if not married), longer residence in Thailand, occupation of seafarer or seafood production worker, Cambodian origin, and perceived AIDS risk. Condom use with sex workers was higher for younger men, married men, men who had been in Thailand longer, men with lower perceived AIDS risk, and men who drank alcohol less frequently.

Keywords AIDS prevention · Migrants · Thailand · Condom use · Networks

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Introduction

Migration has played a major role in the spread of the AIDS epidemic throughout the world. Recently, a number of studies have documented the vulnerability of migrant workers to HIV infection in several Asian countries (Busza & Baker, 2004; He et al., 2005; Lyttleton & Amarapibal, 2002; Nishigaya, 2002; Poudel, Jimba, Okumura, Joshi, & Wakai, 2004; Smith-Estelle & Gruskin, 2003).

Migrants may be vulnerable to infection for many reasons including separation from spouses and family, peer norms, alcohol use, low perceived vulnerability to HIV infection, limited access to health care, and low levels of education. In China, younger male migrants in cities initiated sex earlier, had more premarital and sexual partners, and more frequent sexual encounters (He et al., 2005). Similarly, among Nepali migrants in India, several factors influenced them to practice high risk sexual behaviors (Smith-Estelle & Gruskin, 2003). These factors included peer norms and pressures, low price sex, lack of family restraint, alcohol use, and low perceived vulnerability to HIV and other sexually transmitted infections.

Although Thailand has achieved great success in slowing the AIDS epidemic, prevention efforts must keep pace with a changing environment where HIV infection is endemic (United Nations Development Programme, 2004). This recent UN review of the situation in Thailand noted that more research and prevention programs are needed to address the vulnerability to HIV infection of seafarers as well as other migrant workers.

It is estimated that there are about 2.5 million migrant workers in Thailand, with most originating

from Myanmar, Cambodia, and Laos. Migrants from Cambodia and Laos are more recent and much smaller in number than those from Myanmar. In general, about 75% of migrants are illegal or undocumented. Their number has fluctuated not by the seasonal pattern of migration but by the changing political and administrative periods of strict or relaxed implementation of immigration law. Migrants from Myanmar to the coastal border provinces of Thailand are mostly seafarers or have other dirty, dangerous, and demeaning jobs. A recent study showed that their hometowns were usually near the Thai border and their average length of stay in Thailand was about 4 years on average (Chamrathrithirong, Boonchalaski, & Yampeka, 2005). Migrants from Cambodia, in contrast, had stayed in Thailand only 1 year on average. In general, migrants came as single young men rather than with their families. Because of their separation from their families as well as their difficult employment situations, migrants are vulnerable to various health problems including sexually transmitted infections.

While there have not been systematic studies of HIV prevalence among migrant workers, previous HIV testing in Trad province (in the eastern part of Gulf of Thailand next to Cambodia) showed a high HIV incidence among workers from Cambodia. There is also a growing number of AIDS cases reported at sites where there are Burmese migrant workers including Samut Sakorn province (in the western part of the Gulf of Thailand) (Chamrathrithirong et al., 2005). Data from UNAIDS shows a similar prevalence of HIV infection among adults age 15–49 in all three countries (Cambodia 1.6, CI 0.9–2.6; Myanmar 1.3, CI 0.7–2.0; Thailand 1.4, CI 0.7–2.1) (UNAIDS, 2006). However, testing and surveillance is much more extensive in Thailand than in Cambodia or Burma.

The objectives of this paper are to identify the types of sexual partners of migrant workers, factors related to visiting sex workers, and factors related to condom use with sex workers and other partners. Understanding the types of sexual partners of migrant workers is essential toward understanding HIV infection may spread to different sectors of the population through sex workers and regular partners.

Several factors will be evaluated in relation to use of sex workers and condom use. Demographic factors including age, marital status and living arrangements, length of residence in Thailand, country of origin, and occupation will be examined to measure the influence of contextual factors on condom use. These variables may reflect previous exposure to AIDS prevention activities through school, media, or other interventions.

The association of AIDS education and perceived AIDS risk will also be assessed for association with use of sex workers and condom use. These variables have a basis in AIDS prevention and are included in several major behavioral models (Catania, Kegeles, & Coates, 1990; Rosenstock, Strecher, & Becker, 1994).

Social cognitive theory has played a major role in AIDS prevention (Bandura, 1994). Self-efficacy, an essential part of the theory, is the person's belief that he or she is capable of using condoms with specific partners.

The association of alcohol use with risk-taking behavior will also be examined in this study. Traditional theories of alcohol-related risk have assumed that the pharmacological properties of alcohol directly "disinhibit" behaviors that are normally suppressed (Buffim, 1988; Leigh, 1990). However, if people believe that alcohol causes loss of control over behavior, drinking may produce sexual risk taking due to expectancy effects (Critchlow, 1986). Another hypothesis states that certain personality variables may underlie both drinking and risky sex (e.g., Zuckerman's sensation seeking personality; Zuckerman, 1990).

The literature on the effects of alcohol and drug use on sexual behavior and condom use has very mixed results (Cooper, 2002; Stall & Leigh, 1995; Trocki & Leigh, 1991). An association of alcohol and risky sex seems to differ among populations and may be the result of a complex interaction among personality, situational, and behavioral factors (Leigh & Stall, 1993). Furthermore, it may not be possible to determine causality, because individuals cannot be randomly assigned to control or experimental conditions (Leigh & Stall, 1993). Cooper and Orcutt (2000) have argued that the link between alcohol and risky sex should be stronger with new or occasional sex partners because the effects of alcohol consumption should be stronger for those behaviors that are more strongly inhibited, and also because sexual behaviors occurring with new partners are likely to be more strongly inhibited than those same behaviors occurring with more established partners. Indeed, a meta-analysis of alcohol use on specific occasions concluded that first sex with a partner was more likely to be affected by alcohol than other occasions with that partner (Leigh, 2002).

Methods

Participants

Data for this study were drawn from the Baseline Survey for the Evaluation and Monitoring of the Prevention of HIV/AIDS Among Migrant Workers in

Thailand (PHAMIT) project. A detailed description of the sample design has been published (Chamrathrithirong et al., 2005). The survey was designed as the basis for an assessment of project outcomes at the population level among migrant workers in Thailand. Male and female migrant workers from Myanmar, Lao People's Democratic Republic, and Cambodia were the target populations considered for the assessment. These migrant workers, legal or illegal, were selected at their workplaces. The recruitment was undertaken in workplaces of all sizes and including informal and unregistered workplaces. Overall, 3,426 migrant workers were interviewed according to the following procedures.

The universe of the Baseline Survey was based on ''Statistical Data of Irregular Migrant Worker Registration under the Resolution of the Cabinet 2001'' and ''Estimates of Undocumented Marine Fisheries'' provided by the Raks Thai Foundation. These data on the registered and estimated migrant workers generated the total target population in all the 24 sites of the PHAMIT project. These data were available for the three nationalities of migrant workers (Myanmar, Cambodian, and Laotian), occupational groups (marine fisheries, fishery-related work, factory work, and others), and by province. The data were available for the 22 coastal provinces for marine fisheries and fishery-related work as well as two inland provinces (Chiang Mai and Tak) for factory work and other work-related activities. Data on marine fisheries were not provided for each of the three nationalities. They were estimated using the same nationality distribution of the other occupational groups.

The sampling was undertaken with a stratified sampling design resulting in six stratified samples for the three nationalities and two occupational groups in the 22 coastal provinces, and two stratified samples for two occupational groups among the Burmese in the two inland provinces, Chiang Mai and Tak in the North. The eight stratified groups were presented as follows: (1) Burmese marine fisheries in the coastal provinces, (2) Burmese fishery-related work in the coastal provinces, (3) Cambodian marine fisheries in the coastal provinces, (4) Cambodian fishery-related work in the coastal provinces, (5) Laotian marine fisheries in the coastal provinces, (6) Laotian fishery-related work in the coastal provinces, (7) Burmese factory work in the North, and (8) Burmese ''other work'' in the North.

For each of these stratified samples, the number of migrants to be interviewed was calculated as a proportion of the estimated population of migrant workers according to the numbers listed under the Resolution of the Cabinet 2001. For all the coastal provinces, 0.46% of the estimated migrant populations were drawn as the sample. For the two inland provinces, the sample consisted of 0.23% of the estimated migrants for each of the two provinces and each of the two occupational groups.

According to this method of selection, the first six stratified samples can be analyzed individually as well as in total, because the sampling fractions are the same, i.e., 0.46%. The last two stratified samples can also be added together without weighting, although adding them to the first six stratified samples requires weighting.

For each of the stratified samples, based on the number of migrants distributed by provinces in the database, a sufficient number of provinces were selected for the survey to insure the inclusion of the 22 provinces. As a consequence, 8 of 22 provinces were selected for the Burmese workers, and only 3 and 1 provinces were selected for the Cambodian and the Laotian, respectively. For each of the first four stratified samples, selection of provinces from the 22 coastal provinces was made using probability proportional to size as the method of selection. However, during the fieldwork, two provinces had to be replaced by provinces of equal size due to project program changes resulting from heavy out—migration or new resettlement of workers. For Laotian workers one province was purposively selected (representing the largest settlement of migrant worker population) for each of the two occupational groups.

For the coastal provinces, for each stratified sample, equal numbers of migrants were targeted for interview for each province. Due to the fact that the majority of migrant workers were undocumented, it was not possible to obtain a listing of all migrants and to draw respondents from a sampling frame. Therefore, the snowball technique or chain-referral method was used to recruit respondents.

The field supervisor developed a worksheet and located ''seeds'' (the starting cases) and allowed them to snowball to other cases. The seeds were placed in the program area and roughly spread out proportional to the migrants' settlement quarters. One seed snowballed to about 11 other respondents. The total number of seeds was calculated by dividing the number of target interview cases by 11. For the marine fisheries, male migrants age 15–49 were interviewed. For other occupational groups, both males and females age 15–49 were interviewed. Seeds were also identified by sex and detailed occupational groups (such as fishery-related work, laborers, factory workers, household maids, and farm laborers). It should be noted that the snowball cases did not have to be of the same sex and

occupational groups as the seeds. Seeds were allocated proportionally in different areas and by sex and occupational groups in order to maximize the spread of recruited respondents by the actual settlement pattern and distribution of migrant workers in different work-related activities.

Procedures

The field survey was carried out from the second week of April to the end of June 2004. The number of completed interviews was 3,426 in total, compared to the target of 3,537. The completion rate was 96.9%. Respondents were interviewed face-to-face in private locations.

Measures

The questionnaire included sections on background socio-demographic characteristics, knowledge of HIV and route of transmission, attitudes related to HIV/AIDS, sexuality, condom use, use of contraceptive methods, life skills, awareness of rights and responsibility, and access to services. Four versions of the questionnaire were developed (English, Thai, Burmese, and Cambodian). The translation was made by professionals who work in the study areas in health and HIV/AIDS research. A pretest was conducted in late March, 2004 in Samut Sakhon.

Age was measured in single years of age.

Nationality was self-reported by respondent as Myanmar, Cambodian, Lao, or other.

Gender was coded as male or female.

Years of schooling was coded in single years as reported by respondent.

Marital status and living arrangements were coded as three dummy variables: (1) married and living with spouse, (2) married and not living with spouse, and (3) not married.

Occupation was self-reported as seafarer, fish processing worker, factor worker, agricultural labor, and other.

Ethnic group was self-reported as Karen, Mon, Laotian, Khmer, and other.

Religion was coded as Buddhist, Protestant or Catholic, or Muslim.

Thai language ability was self-reported as able or not able to speak Thai.

Time in Thailand was measured as (1) 6 months or less, (2) 6–12 months, (3) 13–48 months, and (4) 49 or more months.

AIDS knowledge score was calculated by summing the correct answers to a series of 15 questions on transmission and prevention. Questions on transmission included items on sexual transmission, transmission through needles, mother to child transmission, and transmission through breastfeeding. Questions on prevention included items on monogamy and condom use. If a respondent replied that they did not know the answer, they were coded and incorrect. Only a few respondents (three to five) did not give an answer to the questions. Respondents who had not heard of AIDS were given a score of 0 in the logistic analyses (Tables 1, 2) though they are not included in the mean scores in Table 3.

AIDS risk was measured with the question ''Do you think you are at some risk of infection?'' with responses Yes, high risk (coded 3), Yes, but not high risk (coded 2), or No, no risk (coded 1).

Sexual Partners

Respondents were asked if they have a regular partner. They were then asked if they have had a sexual relationship with another partner in the last 12 months. The number of partners was obtained and then they were asked if their other partners were female or male sex workers, boyfriends or girlfriends, co-workers, or other persons. For the bivariate and multivariate logistic regression models, a dichotomous variable, ever visited a sex worker in the last year or not was created.

Condom Use

Respondents were asked if they had ever used condoms with regular partner, sex workers, and other non-regular partners. They were also asked about the frequency of use in the last year, coded as always, most of the time, sometimes, or never. For the logistic regression for use with sex workers, this variable was coded as always or other. For the multiple regression for use with regular partners, this variable was coded all of the time, most of the time, sometimes, and never.

Self-efficacy

Self-efficacy for condom use was coded with the responses to two questions. First, ''Can you deny sexual intercourse when your partner objects to using a condom?'' and ''Can you convince your partner to use a condom when needed?'' Both questions were repeated for regular partners, sex workers, and non-regular partners. Only the first question was retained in the analysis due to a low level of variance in the first question.

Table 1 Bivariate logistic regression models for factors relating to visiting sex workers and use of condoms with sex workers for male migrants

	Visit sex workers		Always use condoms with sex workers	
	Odds ratio	95% CI	Odds ratio	95% CI
Age	0.91	(0.89,0.92)***	0.99	(0.95,1.04)
Marital status and living arrangements				
Not married	11.8	(7.69,18.08)***	0.91	(0.33,2.52)
Married, live apart from spouse	1.57	(0.78,3.17)	0.60	(0.12,2.90)
Married, live with spouse	Reference		Reference	
Years of school	0.99	(0.95,1.03)	1.02	(0.92,1.13)
Time in Thailand	0.96	(0.87,1.07)	0.71	(0.56,0.89)**
Occupation				
Seafarer	6.22	(3.67,10.54)***	0.91	(0.24,3.39)
Seafood production	3.58	(2.01,6.35)***	0.44	(0.57,3.31)
Factory	0.90	(0.40,2.00)	1.50	(0.13,17.01)
Plantation	0.11	(0.01,0.87)*	–	–
Other	Reference		Reference	Reference
Country				
Cambodia	4.42	(3.40,5.74)***	2.32**	(1.04, 5.11)*
Myanmar	0.23	(0.17,0.29)***	0.43**	(0.25,0.74)
Laos	Reference		–	
AIDS knowledge	1.10	(1.07,1.14)***	1.04	(0.95,1.15)
At risk for AIDS	1.71	(1.36,2.14)***	0.46	(0.31,0.68)***
Self-efficacy				
Deny sex worker	–	–	3.44	(1.95,6.09)***
Drink alcohol with sex worker	–	–	0.67	(0.52,0.85)***
N	1,874		380	

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table 2 Multivariate logistic regression models for factors relating to visiting sex workers and use of condoms with sex workers for male migrants

	Visit sex workers		Always use condoms with sex workers	
	Odds ratio	95% CI	Odds ratio	95% CI
Age	0.92	(0.90,0.94)***	1.02	(0.95,1.09)
Marital status and living arrangements				
Not married	8.65	(5.18,14.45)***	1.56	(0.28,8.50)
Married, live apart from spouse	1.71	(0.77,3.80)	4.56	(0.45,45.74)
Married, live with spouse	Reference		Reference	
Years of school	1.03	(0.97,1.08)	1.00	(0.88,1.13)
Time in Thailand	1.45	(1.26,1.66)***	0.71	(0.51,0.98)*
Occupation				
Seafarer	3.78	(2.07,6.90)***	0.88	(0.12,6.52)
Seafood production	3.16	(1.62,6.17)***	0.42	(0.05,3.29)
Factory	0.93	(0.38,2.26)	1.61	(0.10,26.46)
Plantation	0.29	(0.03,2.52)	–	–
Other	Reference		Reference	Reference
Country				
Cambodia	2.60	(1.88,3.59)***	1.92	(0.93, 3.98)
Myanmar, Laos	Reference		Reference	
AIDS knowledge	1.01	(0.95,1.08)	0.95	(0.81,1.12)
At risk for AIDS	1.50	(1.14,1.98)*	0.45	(0.28,0.73)**
Self-efficacy				
Deny sex worker	–	–	2.91	(1.47,5.75)**
Drink alcohol with sex worker	–	–	0.66	(0.48,0.90)**
Wald Chi-square	226.27***		52.86***	
Log likelihood	–665.34		–156.29	
N	1,542		388	

***$p < 0.001$; ** $p < 0.01$; *$p < 0.05$

Table 3 Sexual partners in the last year, condom use, alcohol use, and self-efficacy by gender

Sexual partners	Sex workers	Non-regular partners		Regular partners	
Gender of respondent	Male	Male	Female	Male	Female
% reporting this type of partner in the last 12 months	24.7%	5.8%	0.7%	57.5%	90.6%
N	1,897	1,897	457	1,897	457
Condom use with partner in last year					
Always	78.9%	51.4%	–	0.1%	0.5%
Most of the time	8.4%	16.5%	–	0.5%	0.0%
Sometimes	9.2%	5.5%	–	3.0%	2.4%
Never	3.9%	26.6%	–	96.4%	97.1%
N	465	109		1,045	413
Alcohol frequency last 12 months					
Always	10.5%	7.3%	–	3.2%	0.0%
Most of the time	44.2%	8.3%	–	5.6%	0.5%
Sometimes	26.6%	53.2%	–	44.5%	7.3%
Never	18.7%	31.2%	–	46.7%	92.2%
N	459	109		1,054	411
Can deny sex to partner who refuses condom	84.4%	59.6%	–	53.3%	–
% yes (if used a condom)	440	52	–	45	–

Alcohol Use

Respondents were asked if they drink alcohol before having sex with a partner and how often they drink alcohol before sex. These questions were asked for each type of partner.

Data Analyses

Logistic regression was used to estimate the bivariate and multivariate models for factors related to visiting sex workers and condom use. Relationships were considered statistically significant if $p < 0.05$. Models were not estimated for non-regular partners who were not sex workers due to the small number of cases.

Results

Table 4 shows the demographics of the study sample. In the coastal provinces there were many more male than female migrants, probably due to the predominance of fishery and seafarers in the coastal provinces and factory work in the inland provinces. The migrants are a young population with most persons in the 15–24 or 25–34 age group. Marital status differed by ethnicity and gender. More women were married than men (54% of women compared to 28% of men). The proportion of men who were married was particularly low for Cambodia (9.3%). The majority of female migrants from Cambodia were married in the coastal provinces (70%), while more than half of female migrants in Chiang Mai and Tak were single (54%).

Migrant workers differed in their educational level by location and origin. The fishery workers in the coastal provinces tended to have lower education than the inland factory workers. Almost half of the workers from Myanmar in the fishery industry had only 1–4 years of schooling while migrants to the North had more education on average. For all groups of migrants, women had less education than men.

The majority of workers in the coastal areas worked in the fishery industry while those in Chiang Mai and Tak worked in factories and the market. In the coastal provinces, men from Myanmar worked mostly as seafarers (62%) and women worked as fish processing labor (60%). Among Cambodian migrants, 78% of men were seafarers and 74% of women worked in the fish processing industry.

The time spent in Thailand varied among respondents. About 36% had been there 4 or more years and 37% 2–4 years. Among those who had been in Thailand less than a year, about half were present in Thailand for 6 months or less. Generally, Cambodian males had been in Thailand for shorter periods of time.

Table 5 shows the ethnic and religious characteristics of the migrants. Almost all migrants from Cambodia were of Khmer ethnic origin (99%). The majority of migrants from Myanmar (up to 61%) were Burmese. In the coastal provinces, about one-fourth of the workers were Mon. Karen were also present in the coastal and inland areas. In Chiang Mai and Tak, other minorities were also significant (almost 20%).

Buddhism was the predominant religion for all nationalities and areas. Almost 100% of migrant workers in the coastal provinces were Buddhist. However, almost 10% of Cambodian workers were

Table 4 Demographic characteristics of migrant workers in Thailand by area of province of residence, nationality, and sex

	Myanmar-Coastal		Cambodia-Coastal		Myanmar-North		Total		
	Male	Female	Male	Female	Male	Female	Male	Female	Total
Age									
15–24	45.6	38.0	53.3	36.9	41.4	38.9	45.9	48.4	44.2
25–34	40.0	31.4	38.6	39.5	32.6	44.6	40.3	44.5	41.2
35–49	14.5	17.2	8.2	23.7	15.9	16.4	13.9	17.1	14.6
Total	100	100	100	100	100	100	100	100	100
Marital status									
Married/living together	20.6	62.0	7.9	44.4	24.9	29.1	19.2	49.1	25.1
Married/not living together	8.7	7.8	1.4	2.8	12.8	12.4	7.8	9.2	8.1
Not married	70.7	30.2	90.6	52.8	62.3	58.1	73.0	41.7	66.7
Total	100	100	100	100	100	100	100	100	100
Years of school									
1–4 years	43.6	61.8	35.6	43.3	24.7	27.6	38.9	43.0	39.9
5–6 years	25.5	17.4	30.4	36.7	18.0	21.7	24.9	20.4	23.8
7 years+	30.9	20.8	34.1	20.0	57.3	50.7	36.2	36.7	36.3
Total	100	100	100	100	100	100	100	100	100
Occupation									
Seafarer	62.3	0.0	77.8	0.0	0.0	0.0	53.7	0.0	41.3
Fish processing labor	18.8	59.9	19.6	73.7	0.0	0.0	15.7	30.0	19.0
Factory worker	7.2	17.4	0.0	0.0	27.9	43.4	9.8	29.9	14.4
Agricultural labor	5.7	5.8	0.0	0.0	6.2	2.2	5.0	3.7	4.7
Other	6.0	16.9	2.6	26.3	65.9	54.4	15.9	36.3	20.6
Total	100	100	100	100	100	100	100	100	100
Time in Thailand									
0–6 months	10.7	9.8	32.2	27.8	15.9	11.0	14.6	11.1	13.9
7–12 months	12.4	12.3	21.6	19.4	10.5	12.3	13.5	12.6	13.3
13–48 months	35.9	44.3	29.1	33.3	37.7	37.4	35.3	41.7	36.6
49 or more months	41.0	33.5	17.1	19.4	35.8	39.2	36.6	34.6	36.2
N	2,026	397	428	38	258	226	2,598	776	3,374

Muslim. Among migrants in Chiang Mai and Tak, 70% were Buddhist, 23% Christian, and 7% were Muslim. About 72% of migrants reported that they could speak Thai, with higher proportions in the coastal areas.

Most respondents had heard of AIDS (86%). These respondents were asked 15 questions about AIDS transmission and treatment and they answered at little more than half of them correctly (Table 6). Most migrants knew the main transmission routes for AIDS (sex, needles, mother to child, breastfeeding), but also had misconceptions about transmission through casual contact including infection by sharing at meal (20% not correct) and through mosquito bites (48% not correct). Only 55% of respondents reported that a health looking person could transmit AIDS. Migrants from Myanmar had lower levels of knowledge than those from Cambodia (data not shown).

About 67% of migrants reported that they had ever had sex. Migrants were generally not likely to consider themselves at risk for HIV infection. Indeed, 92% of males and 94% of females reported that they were not at risk. Those who reported themselves to be at risk were most likely to report that they visited sex workers (men) or they did not trust their partner (women).

Types of Sexual Partners

Respondents who reported sexual activity were asked about the different types of sexual partners that they had in the last year (Table 3). These partners included sex workers, regular partners, and other non-regular partners. Male respondents reported more types of partners than did females. Among men, 25% reported visiting a sex worker in the last year, 57% reported a regular partner, and 6% reported another non-regular partner. Among women, 91% reported a regular partner and 1% reported a non-regular partner. Women did not report any commercial partners.

Condom use varied strongly by type of partner. Most men (96%) who had visited a sex worker in the last year reported that they had ever used a condom with a sex worker and 79% reported that they always use condoms with sex workers. However, very few men (4%) had used a condom when with a regular partner and close to 0% reported using them all of the time. About 27% reported ever using a condom when with a non-regular partner who was not a sex worker, while 51% used a condom all of the time. Among women, only 3% reported ever use of a condom when with a regular partner.

Table 5 Percent distributions of ethnic and religious characteristics and Thai language ability of migrant workers, by area of province and nationality

	Myanmar-Coastal	Cambodia-Coastal	Myanmar-North	Total
Ethnic group				
Karen	14.2	0.0	11.6	11.8
Mon	23.4	0.4	7.4	16.6
Burmese	56.7	0.0	60.7	50.9
Laotian	0.1	0.2	1.0	0.4
Khmer	0.0	98.9	0.0	12.0
Other	5.5	0.4	19.2	8.3
Total	100	100	100	100
Religion				
Buddhism	97.9	89.9	69.9	89.8
Protest/ Catholic	1.9	.4	22.9	7.0
Muslim	.2	8.8	7.0	3.0
Total	100	100	100	100
Speak Thai				
Yes	77.2	67.7	59.9	71.7
No	22.8	32.3	40.1	28.3
Total	100	100	100	100.0
N	2,423	466	485	3,376

Table 6 AIDS knowledge, sexual experience, and perceived AIDS risk

	Male	Female	Total
Heard of AIDS (%)	87.9	81.6	86.5
N	2,597	777	3,374
AIDS knowledge score (if heard of AIDS) (range 0–15)	8.9	8.7	8.8
N	2,385	531	2,958
% ever had sex	69.0	62.5	67.5
N	2,596	777	3,373
At risk for AIDS (if had sex) (%)			
Yes, high risk	2.4	3.2	2.5
Yes, but not high risk	5.9	2.8	5.2
Not at risk	91.7	94.0	92.2
N	2,379	528	2,907

Alcohol use was common among males with all types of partners, but was more often reported with sex workers (81% ever used) than with regular partners (53% ever used). The frequency of use was also higher among sex workers. Women in the study reported only a low use of alcohol (8% used with regular partners).

Respondents who had used condoms were also asked about their self-efficacy with regard to condom use with sex workers. About 84% reported they could deny sex to a sex worker who refused to use a condom. However, only 60 and 53%, respectively, of migrants reported that they could deny sex to a regular partner or other non-regular partner.

Factors Related to Visiting Sex Workers and Using Condoms with them

Bivariate Analysis

Table 1 shows a bivariate logistic analysis of factors related to visiting sex workers and factors related to always using condoms with these workers. Factors related to visiting sex workers included age, OR = 0.91, 95% CI 0.89–0.92, $p < 0.001$. Older men were less likely to visit sex workers. Marital status and living arrangements were also related to visiting sex workers. Men who were not married were more likely to visit sex workers, OR = 11.8, 95% CI 7.69–18.08, $p < 0.001$.

Occupation was also related to visiting sex workers. Seafarers OR = 6.22, 95% CI 3.67–10.54, $p < 0.001$, and seafood production workers, OR = 3.58, 95% CI 2.01, 6.35, $p < 0.001$, were more likely to visit sex workers than other workers. Plantation workers, OR = 0.11, 95% CI 0.01–0.87, $p < 0.05$, were less likely to visit sex workers.

Country of residence was also a factor in visiting sex workers. Males from Cambodia were more likely to visit sex workers, OR = 4.42, 95% CI 3.40–5.74, $p < 0.001$. Workers from Myanmar were less likely to visit sex workers than other workers, OR = 0.11, 95% CI 0.01–0.87, $p < 0.05$. Education, time in Thailand, AIDS knowledge and perceived AIDS risk were not related to visiting sex workers.

Table 1 also shows a bivariate analysis of factors related to always using condoms with sex workers. Time in Thailand was significantly related to always using condoms with sex workers, OR = 0.91, 95% CI 0.24–3.39, $p < 0.01$. Migrants who had been in Thailand longer were less likely to always use condoms. Cambodian migrants were more likely to always use condoms than were migrants from Laos, OR = 2.32, 95% CI 1.04, 5.11, $p < 0.05$. Those migrants who always used condoms were less likely to feel at risk for AIDS than were other migrants, OR = 0.46, 95% CI 0.31–0.68, $p < 0.001$.

Self-efficacy was also related to condom use OR = 3.44, 95% CI 1.95, 6.09, $p < 0.001$. Those migrants who reported that they could deny sex to a sex worker who refused to use a condom were more likely to always use condoms. Finally, migrants who reported drinking alcohol with sex workers were less likely to always use condoms, OR = 0.67, 95% CI 0.52–0.85, $p < 0.001$.

In this bivariate analysis, age, marital status and living arrangements, education, occupation, and AIDS knowledge were not related to always using condoms with sex workers.

Table 2 shows a multivariate logistic regression model for factors related to visiting sex workers among male migrants. These results are very similar to the bivariate results in Table 1. Older men were less likely to visit sex workers than younger men, OR = 0.92, 95% CI 0.90–0.94, $p < 0.001$. Men who were not married were more likely to visit sex workers, OR = 8.65, 95% CI 5.18–14.45, $p < 0.001$. Men who were in Thailand longer were more likely to visit sex workers, OR = 1.45, 95% CI 1.26, 1.66, $p < 0.001$.

Occupation was a significant factor in visiting prostitutes. Seafarers, OR = 3.78, 95% CI 2.07–6.90, $p < 0.001$, and seafood production workers, OR = 3.16, 95% CI 1.62–6.17, $p < 0.001$, were more likely to visit prostitutes than men with other occupations. Country of origin was also related to visiting sex workers. Cambodian men were more likely than men from Myanmar and Laos to report visits to sex workers.

While AIDS knowledge was not related to visiting sex workers, AIDS risk was related to sex workers visits. Men who visited sex workers reported a greater perceived risk for infection with AIDS, OR = 0.50, 95% CI 1.14–1.98, $p < 0.05$.

Table 2 also shows a multivariate logistic model for always using condoms with sex workers. Time in Thailand was negatively associated with condom use, OR = 0.71, 95% CI 0.51–0.98, $p < 0.05$, as were perceived risk for AIDS, OR = 0.45 95% CI 0.28–0.73, $p < 0.01$, self-efficacy, OR = 2.91, 95% CI 1.47–5.75, $p < 0.01$, and alcohol use with sex workers, OR = 0.66, 95% CI 0.48–0.90, $p < 0.01$.

Condom Use with Regular Partners

Regression models were also estimated for consistency of condom use with regular partners (data not shown). The measures of self-efficacy were not included due to the low level of use. Most of the independent variables were not related to condom use. Among men, only AIDS knowledge and marital status/living arrangements were related to use. Men with higher levels of knowledge were more likely to use condoms consistently. Men who were married but not living with their spouse were more likely to use condoms consistently with their regular partner.

Among women, the only significant variable was AIDS knowledge. Condom use consistency with regular partners was higher for women with greater AIDS knowledge.

Discussion

The study has provided some unique data for AIDS prevention in Thailand. While men reported a variety of different types of partners in their sexual networks (regular partners, sex workers, other non-regular partners), women reported mainly regular partners. Factors related to visiting sex workers included marital status and living arrangements (more visits if not married), longer residence in Thailand, occupation of seafarer or seafood production worker, Cambodian country of origin, and higher perceived AIDS risk. Condom use was high with sex workers (96% ever used a condom and 79% of these men reported they always use a condom with sex workers), but low with regular partners (4% ever use). Condom use with sex workers was higher for younger men, married men, men who had been in Thailand longer, men with lower perceived AIDS risk, and men who drank alcohol less frequently with sex workers. AIDS knowledge was related to condom use with regular partners for both men and women.

These results are in agreement with studies of migrants in other Asian countries. Migrants in Thailand had a low perceived vulnerability to sexually transmitted infections while practicing risky sexual behaviors (He et al., 2005; Lyttleton & Amarapibal, 2002; Poudel et al., 2004). Alcohol use was also noted as a risk factor in Thailand as well as other Asian countries (Poudel et al., 2004).

The study has some limitations. The data are cross-sectional so that causal inferences about the findings should be drawn with caution. In addition, the variance of the condom use variables was small, limiting our ability to find significant relationships with the independent variables.

The study has shown where intervention efforts are needed most. Seafarers, male seafood production workers, single men, and Cambodians had higher risk behaviors through commercial sex than other male migrants.

AIDS knowledge was not related to use of condoms with sex workers, but was related, both for men and women, for condom use with regular partners. This association for use with regular partners may be due to previous experience with prevention programs due to experience with HIV testing, infection of friends, or awareness of risk-taking behaviors of male migrants.

The high use of condoms with sex workers reflects the strong ''100% condom use'' program that was initiated by the Thai government (United Nations Development Programme, 2004). In focus groups with migrant workers, it was noted that brothel workers would insist on condom use while women who worked from their homes or other informal setting would not be as likely to insist upon use.

The frequency of alcohol use was also associated with condom use with sex workers. In focus group

discussion with these men, it was noted that men may use alcohol because they feel shy about visiting sex workers and they may drink alcohol to lower their inhibitions. Possible intervention strategies may focus on increasing awareness of ability of alcohol use to interfere with condom use with sex workers.

There is a large population of migrants in Thailand from neighboring countries. Although migrants have some knowledge of AIDS, this knowledge does not automatically lead to condom use. Prevention effort is needed to strengthen knowledge and to raise awareness of susceptibility to HIV infection, particularly with non-commercial partners.

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