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High Prevalence of HIV and Sexually Transmitted Infections Among Indirect Sex Workers in Cambodia

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Objectives: **The goal of this study was to assess the baseline prevalence of and risk factors for HIV and other sexually transmitted infections (STIs) among beer girls enrolled in a behavioral intervention in Battambang, Cambodia.**

Methods: **Ninety-two of 114 women participated in baseline interviewing, HIV/STI testing, and STI treatment. Blood specimens were tested for syphilis and HIV infection. Self-administered vaginal swabs were tested for trichomonas, bacterial vaginosis (BV), gonorrhea, and chlamydia infections.**

Results: **HIV prevalence was 26%. STI prevalences were: 14% chlamydia, 12% trichomonas, 3% gonorrhea, and 0% syphilis. The prevalence of BV was 43%. A history of sex work was reported by 82%. Consistent condom use with clients was reported by 39%. Increased number of partners and symptoms of STI were significantly associated with HIV infection.**

Discussion: **These data suggest high sexual risk among beer girls in Cambodia. Targeted and frequent HIV and STI interventions are urgently needed in this population.**

CAMBODIA HAS EXPERIENCED a burgeoning HIV epidemic since the first case of HIV infection was detected in 1991. The effects of poverty and civil war, in combination with an explosive spread of sexually transmitted infections (STIS) among sex workers in the mid-1990s, and widespread patronage of sex work has facilitated the expansion of the HIV epidemic from high-risk populations to the general population.[1–9] One decade later, Cambodia has the highest prevalence of HIV infection in Asia.[10] From 1991 to 2002, the cumulative number of HIV cases was approximately 82,000 among men and 75,000 among women, representing 3% of the adult population ages 15 to 49 years.

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Since 1995, the National Center for HIV, AIDS, Dermatology and STDs (NCHADS) of the Ministry of Health of Cambodia has conducted annual, national HIV sentinel surveillance (HSS) surveys among well-defined risk populations to monitor trends in HIV infection. In 2002, the HSS estimated an HIV prevalence of 28.8% (95% confidence interval [CI], 26.6–31.2%) among 3109 brothel-based sex workers (referred to as "direct sex workers" [DSWs]); 14.8% (95% CI, 12.7–17.1%) among 1231 indirect sex workers (nonbrothel-based such as beer promoters, karaoke lounge singers, bar girls, and massage parlor women); 8.4% (95% CI, 7.3–9.7%) among 2356 tuberculosis patients; 3.1% (95% CI, 2.6–3.7%) among 4375 police; and 2.8% (95% CI, 2.5–3.2%) among 9166 women attending antenatal clinics.[11] Trend data from HSS suggest that the prevalence of HIV among DSWs has steadily declined from 43% in 1998 to 29% in 2002. This trend was not observed among indirect sex workers (IDSWs), in whom the prevalence of HIV remained stable at approximately 15% during the same period.[11]

Beer promotion girls (hereafter referred to as "beer girls") are the predominant group of IDSWs in Cambodia. Beer girls are employed by local beer distributors to promote and sell beer to customers in restaurants and bars. Beer girls typically receive a monthly salary of 280,000 Riels ($70 US)[12,13] and also receive monetary bonuses based on the number of beer can tabs collected each night. Beer girls are required to wear a uniform and are encouraged to socialize with their customers to increase the purchase and consumption of alcohol. To supplement their salary, beer girls may also exchange sex for money with their customers.[12,13]

According to national behavioral surveillance surveys, risky sexual behavior is highly prevalent among IDSWs. Reported condom use is lower among beer girls compared with DSWs.[12–15] Furthermore, more beer girls are reporting a history of exchanging sex for money or gifts in the past year, up from 13% reported in 1997 to 31% in 2001.[13] Of note, although the majority of beer girls may not report engaging in "sex work," many report receiving

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compensation from sexual relationships such as from a boyfriend after each sex act and/or having "another" source of income from clients.

Current programs to prevent HIV infection in Cambodia include a national condom use campaign, screening for and treatment of STI, voluntary HIV counseling and testing, and health outreach and education.[5] The most successful program to date has been a 100% condom use program implemented in 1999 and tailored after Thailand's national program.[16–19] Cambodia's program exclusively targets DSWs and their clients by promoting consistent condom use through education and collaboration among sex workers, brothel owners, local law enforcement authorities, and the government sector. The combined efforts of the condom campaign, improved STI management, and outreach efforts have coincided with concomitant increases in consistent condom use among DSWs with their clients, from 37.4% in 1997 to 89.7% in 2001.[13] In contrast, similar interventions designed specifically to reach IDSWs have not been widely implemented.[19] At present, IDSWs remain one of the populations at highest risk for HIV in Cambodia.

In this article, we report baseline findings on the prevalence of and risk factors for HIV and STI infection in beer girls who enrolled in an HIV risk reduction intervention study conducted in Battambang, Cambodia, from August 2001 to February 2002.

Methods

Setting

The city of Battambang is located in the northwest region of Cambodia, approximately 300 km from Phnom Penh and 100 km from the Thai border. With a population of approximately 500,000, Battambang is the second largest province in Cambodia. Because of its location along a major road connecting Phnom Penh with Thailand, Battambang has a significant amount of commercial and agricultural activity, providing employment opportunities for a number of mobile populations, including truckers, traders, businessmen, uniformed officials, and sex workers.[20] In 2003, it was estimated that approximately 250 DSWs and 500 IDSWs resided in Battambang.

Recruitment and Enrollment

At the time of the survey, there were 5 beer distribution companies operating in Battambang, each of which employed approximately 10 to 30 women to promote their product. All beer girls in Battambang were recruited to participate in this study through special recruitment sessions conducted in a private room at each beer company site. Women who were interested in participating in the study were asked to come to the municipal STI clinic, where they could obtain more information, enroll in the study, and complete study screening and enrollment procedures.

Data Collection

After providing written informed consent, participants completed a 20-minute, interviewer-administered questionnaire that identified participant demographic characteristics, HIV and STI-related risk behaviors, HIV/AIDS knowledge, and reproductive health-related behaviors. After the interview, blood specimens were collected to test for HIV-1 and syphilis (*Treponema pallidum*) infections. All participants were instructed on collection procedures for self-administered vaginal swabs, and subsequently asked to collect 3 specimens under the supervision of a nurse to test for gonorrhea (*Neisseria gonorrhoeae*), chlamydia (*Chlamydia trachomatis*), trichomonas, and bacterial vaginosis (BV) infections.[21] Women were given a unique code at enrollment to receive their STI and HIV test results.

Because of the delay in obtaining results of gonorrhea and chlamydia testing, all participants were treated for gonorrhea (400 mg cefixime mg orally) and chlamydia infection (1 g azithromycin orally) at enrollment, regardless of symptoms. Participants were requested to return to the clinic after 2 weeks to obtain their STI results and to receive treatment for BV and trichomonas infections if needed (2 mg metronidazole orally). Additional medications for partner treatment were available to women who were diagnosed with any STI and reported having a private sexual partner. Posttest counseling and HIV results were available to participants at the municipal voluntary counseling and testing site.

Laboratory Methods

Blood specimens were tested for HIV-1 antibody using 2 rapid enzyme-linked immunosorbent assay kits (Genscreen HIV1/2 version 2, Sanifi Diagnositics, Pasteur, France; Serodia HIV, Fujirebio Inc., Tokyo, Japan). Specimens reactive on both tests were considered HIV-1 antibody-positive. Sera were tested for syphilis using the rapid plasma reagin test and confirmed using the microhemagglutination test for *T. pallidum.* A polymerase chain reaction test (PCR; Abbott Laboratories, Abbott Park, IL) was used to detect gonococcal DNA, chlamydia DNA, or both in self-collected vaginal swab specimens. "Trich In Pouch" (Biomed Diagnostics, Santa Clara, CA) was used to test for trichomonas; BV was detected using the "BV Blue" testing kit (Gryphus Laboratories, Birmingham, AL).[22]

Laboratory tests for the detection of HIV, syphilis, BV, and trichomonas were conducted at the Battambang Municipal Referral Hospital laboratory. Cervical specimens were placed in PCR transport media, stored and frozen at −20°C, and transported to Bangkok, Thailand, where they were processed to detect gonorrheal and chlamydial infections at the laboratory of the STI Cluster, Bureau of AIDS, TB and STI of the Department of Disease Control, Thailand Ministry of Public Health.

Measures

Key measures included data on demographic characteristics, employment history, sexual and drug use risk behaviors, STI symptoms, health-seeking behaviors, and HIV and laboratory-confirmed test results for STI. Demographic data included age, education, marital status, place of residence, and migratory patterns. Employment data included employment history, duration of work as a beer girl, income, and sources of income. Risk behavior data included condom use at last sex, condom use in the past 3 months, type(s) of partners, number of partners, history of exchanging sex for money or gifts, and history of drug use. Histories of abnormal vaginal discharge, genital ulcer, burning while urinating, lower abdominal pain, abnormal vaginal bleeding, genital rash, and genital warts in the past 3 months and in the past year were also collected.

A history of sex work was defined as answering "yes" to one or more of the following questions and/or statements: 1) Have you ever received money or gifts for having sex with a man? 2) Do you have another source of income from "sexual clients"? 3) My sweetheart/boyfriend gives me money every time we have sex.

Data Analyses

Data were entered into a database using a unique study identification number. Frequencies were generated for categorical data and means, medians, ranges, and interquartile ranges (IQRs) for continuous variables. Ninety-five percent confidence intervals for

TABLE 1. Frequency of Reported Sociodemographic Characteristics and Associations With HIV Prevalence Among Beer Girls in Battambang, Cambodia, 2002

Selected Characteristics	All Participants N (%)	HIV-1-Positive N (%)	Age-Adjusted Odds Ratio (95% CI)	*P* Value
Age, years (n = 92)				
Median age (range)	24 (18–36)	24 (18–31)	1.0 (0.9–1.2)	0.8
18–19	15 (16.3)	4 (26.7)	2.9 (0.3–31.2)	0.4
20–24	39 (42.4)	8 (20.5)	2.1 (0.2–19.0)	0.5
25–29	29 (31.5)	11 (37.9)	4.9 (0.5–44.6)	0.2
30 and older	9 (9.8)	1 (11.1)	1.0	
Currently married (n = 92)				
Yes	24 (26.1)	8 (33.3)	1.6 (0.5–4.4)	0.4
No	68 (73.9)	16 (23.5)	1.0	
Education level, years (n = 92)				
Median years educated (range)	4 (0–13)	3.5 (0–8)	0.8 (0.7–0.98)	0.04
No education	10 (10.9)	5 (50.0)	1.0	
1–4 y	39 (42.4)	11 (28.2)	0.4 (0.1–1.6)	0.2
5–8 y	35 (38.0)	8 (22.9)	0.3 (0.1–1.3)	0.1
>8 y	8 (8.7)	0 (0)	NA	NA
Income last month, Riels (n = 92)				
<200,000 (<$50)	16 (17.4)	5 (31.3)	1.0	
200,000–300,000 ($50–75)	67 (72.8)	15 (22.4)	0.6 (0.2–2.1)	0.4
>300,000 (>$75)	9 (9.8)	4 (44.4)	1.7 (0.3–9.5)	0.5
Previous job history (n = 92)				
Karaoke girl				
Yes	19 (20.7)	4 (21.1)	0.7 (0.2–2.4)	0.6
No	73 (79.3)	20 (27.4)	1.0	
Dancing girl				
Yes	4 (4.4)	4 (100)	30.1 (1.6–582.2)	<0.01
No	88 (95.6)	20 (22.7)	1.0	
Massage girl				
Yes	2 (2.2)	0	0.5 (0.3–11.7)	0.4
No	90 (97.8)	24 (26.7)	1.0	
Factory worker				
Yes	4 (4.4)	0	0.3 (0.02–5.6)	0.2
No	88 (95.6)	24 (27.3)	1.0	

CI indicates confidence interval; NA = not applicable.

the prevalence of HIV infections and STI were based on a binomial exact distribution. Bivariate analyses of associations between selected risk exposures and HIV and STI outcomes were assessed. Multiple logistic regression analysis was used to identify independent correlates of prevalent HIV infection. Variables found to be associated with HIV infection at the 0.2 significance level in the univariate analysis were tested in the model. Variables that remained significantly associated with HIV infection at a $P < 0.05$ significance level or were important confounders were included in the final model. All analyses were performed using STATA 7.0 (STATA, College Station, TX).

The protocol for the study was approved by the Institutional Review Board of the Committee on Human Research at the University of California, San Francisco and the Ethical Review Board of NCHADS in Cambodia.

Results

A total of 114 beer girls were employed in Battambang at the time of the survey. Of these, 92 women came to the STI clinic (80.7%) and were enrolled in the study. Two women (2.2%) refused to provide vaginal specimens; all women provided a blood specimen. Two weeks after enrollment, 80 of the 92 (87.0%) study participants returned for their STI results. Of the 46 women (51.1%) with a positive STI test result, 7 (15.2%) did not return for results and treatment.

The median age of the 92 participants was 24 years (range, 18–36 years). The median number of years of education was 4 years (range, 0–12 years). Over one fourth (26.1%) of participants were married (Table 1). The majority of women (72.8%) reported a monthly income of 200,000 to 300,000 Riels ($50 to $75 US) as a beer girl, and nearly all (96.7%) reported that they had another source of income. Among the various sources reported, 30.3% stated that they received money from their boyfriends and 61.8% reported receiving money from clients. Participants reported living in Battambang for a median of 7 years (IQR 1–20) and working as a beer girl for a median of 7 months (IQR 2–24) (data not shown).

Eighty-two participants (89.1%) reported *ever* having sex. Among those, the median number of lifetime sexual partners was 3 (IQR 1–5) (Table 2). A history of sex work was reported by 81.7% of sexually active women. Among women who reported having a husband or boyfriend, 24.6% reported always using a condom in the past month with that partner. Furthermore, 38.7% of those reporting a sexual client also reported always using a condom with their client in the past month.

HIV infection was detected in 26.1% (95% CI, 17.5–36.3) of participants. The overall prevalence of any STI and/or BV was 50.0% (95% CI, 39.6–60.4), including gonorrhea (3.3%; 95% CI, 6.9–9.4), chlamydia (14.4%; 95% CI, 7.9–23.4), trichomonas (12.2%; 95% CI, 6.3–20.8), and BV (43.3%; 95% CI, 33.7–55.3)

TABLE 2. Frequency of Reported Sexual Risk Behaviors and Associations With HIV Prevalence Among Beer Girls in Battambang, Cambodia, 2002

Selected Characteristics	All Participants N (%)	HIV-1-Positive N (%)	Age-Adjusted Odds Ratio (95% CI)	*P* Value
Lifetime sexual partners (n = 92)				
Median number (IQR)	2 (1–5)	3 (1–7)	1.04 (1.0–1.08)	0.06
0 partners	10 (10.9)	1 (10.0)	1.0	
1 partner	22 (23.9)	5 (22.7)	2.7 (0.3–26.2)	0.4
2–10 partners	52 (56.6)	13 (25.0)	3.0 (0.3–26.0)	0.3
11+ partners	8 (8.7)	5 (62.5)	15 (1.2–185.2)	0.04
Years sexually active (n = 82)†				
Median years (IQR)	5 (3–8)	6 (3–10)	1.1 (0.9–1.2)	0.4
<1 y	4 (4.9)	1 (25.0)	1.0	
1–2 y	13 (15.8)	2 (15.4)	0.5 (0.03–8.3)	0.7
3–5 y	28 (34.2)	8 (28.6)	1.3 (0.1–16.0)	0.8
>5 y	37 (45.1)	12 (32.4)	1.8 (0.1–30.3)	0.7
Ever exchanged sex for money (n = 82)†				
Yes	67 (81.7)	17(25.4)	0.5 (0.2–1.6)	0.2
No	15 (18.3)	6 (40.0)	1.0	
Condom use with husband or boyfriend in past month (n = 65)‡				
Always				
Not always	16 (24.6)	4 (25.0)	0.8 (0.2–3.0)	0.7
	49 (75.4)	14 (28.6)	1.0	
Condom use with client in the past month (n = 31)§				
Always	12 (38.7)	3 (25.0)	0.9 (0.2–4.9)	0.9
Not always	19 (61.3)	5 (26.3)	1.0	

†The denominator for this variable is 82 participants who reported *ever* having sex.
‡The denominator for this variable is 65 participants who reported having had sex with a main partner in the last month.
§The denominator for this variable is 31 participants who reported having had sex with a client in the last month.
CI indicates confidence interval; IQR = interquartile range.

(Table 3). The prevalence of any STI without BV was 26%. No syphilis infections were detected.

Participants reported the following symptoms in the past year: abnormal vaginal discharge (62.0%), genital rash (48.9%), lower abdominal pain (41.8%), burning while urinating (26.1%), genital ulcer (7.6%), abnormal vaginal bleeding (6.5%), and genital warts (1.1%) (Table 3). Among the 70 women who reported symptoms in the past 3 months, 36.4% reported using medicine purchased at a pharmacy (self-medication), 16.7% reported never seeking treatment, and 6.1% reported seeking treatment at an STI clinic.

The prevalence of HIV infection among women employed as a beer girl for less than 6 months was 27.3% (Fig. 1). The prevalence of HIV infection was 21.4% among women employed between 7 and 12 months, 16.7% among women employed between 13 and 24 months, and 37.5% among women employed greater than 24 months. Women who had worked as a beer girl for less than 6 months were significantly more likely to be younger (median age: 22 years vs 26 years, $P < 0.01$), report previous employment as a karaoke lounge singer (31% vs 3%, $P < 0.01$), and were significantly less likely to report having used condoms at last sex (31% vs 58%, $P = 0.01$) compared with women who had worked for longer periods of time.

Fewer years of education (AOR, 2.0 for every category decrease in education; 95% CI, 1.1–3.3), greater number of lifetime sexual partners (AOR, 2.0 for every category increase in sexual partners; 95% CI, 1.0–4.0), and self-reported symptoms of STI in the past 3 months, including "abnormal vaginal discharge" (AOR, 3.0; 95% CI, 1.0–9.0) and "genital rash" (AOR, 3.5; 95% CI, 1.1–9.7) were significantly associated with prevalent HIV infection after adjusting for age (Tables 2 and 3).

Discussion

In this sample of beer girls, one in 4 women was infected with HIV. These results are higher than national figures in which 15% of IDSWs in Cambodia were infected with HIV in 2002.[11] In addition, the prevalence of STI and BV infection was elevated, with one in 2 women infected with an STI and/or BV. The high prevalence of STI, especially chlamydia and trichomonas, markedly contrasts with the low prevalence of STI (<3%) found in women attending antenatal clinics in 2000.[23] Together, these results highlight the acute and serious nature of the HIV epidemic and the ongoing susceptibility to HIV infection that exists among Cambodian IDSWs and their clients.

Beer girls who had been employed for greater than 24 months had the highest prevalence of HIV. As reflected in the "U-shaped" distribution of HIV prevalence by duration of employment, women working less than 6 months also had elevated levels of HIV infection. The high front end of this curve is suggestive of the following hypotheses and highlight areas of future prevention research. First, before becoming a beer girl, these women may already be engaging in high-risk behaviors that place them at increased risk for HIV infection. Second, newly employed beer girls may be perceived as more desirable to potential clients and thus, quickly enter into a high-risk lifestyle of sex, drinking, and social competition. In particular, these women may feel pressured to have sex with "core transmitters" in their surroundings, which may include beer company owners, restaurant owners, and uniformed officials. Finally, the younger age of these women also may increase their vulnerability to HIV transmis-

TABLE 3. Frequency of Reported Sexually Transmitted Infection (STI) Symptoms, HIV and STI Diagnoses, and Associations With HIV Prevalence Among Beer Girls in Battambang, Cambodia, 2002

Variables	All Participants N (%)	HIV-1-Positive N (%)	Age-Adjusted Odds Ratio (95% CI)	*P* Value
STI symptoms (n = 92)				
In the past year, have you had any of the following symptoms?				
Abnormal vaginal discharge				
Yes	57 (62.0)	19 (33.3)	3.0 (1.0–9.0)	0.05
No	35 (38.0)	5 (14.3)	1.0	
Genital rash				
Yes	45 (48.9)	17 (36.2)	3.5 (1.3–9.7)	0.01
No	47 (51.1)	7 (15.6)	1.0	
Lower abdominal pain				
Yes	38 (41.8)	9 (23.7)	0.9 (0.3–2.5)	0.9
No	53 (58.2)	14 (26.4)	1.0	
Burning while urinating				
Yes	24 (26.1)	7(36.2)	1.5 (0.5–4.5)	0.4
No	68 (73.9)	17 (23.5)	1.0	
Genital ulcer				
Yes	7 (7.6)	3 (42.9)	2.2 (0.4–10.7)	0.3
No	85 (92.4)	21 (24.7)	1.0	
Abnormal vaginal bleeding				
Yes	6 (6.5)	1 (16.7)	0.5 (0.1–4.9)	0.6
No	86 (93.5)	23 (26.7)	1.0	
Genital wart				
Yes	1 (1.1)	0	NA	NA
No	91 (98.9)	23 (26.4)		
HIV and STI diagnosis†				
HIV-1 (n = 92)				
Positive	24 (26.1)	24 (100)	NA	NA
Negative	68 (73.9)	0		
Rapid plasmin reagin (syphilis) (n = 92)				
Positive	0 (0)	0 (0)	NA	NA
Negative	92 (100)	24 (100)		
Gonorrhea (n = 90)				
Positive	3 (3.3)	1 (33.3)	1.4 (0.1–16.1)	0.8
Negative	87 (96.7)	23 (26.4)	1.0	
Chlamydia (n = 90)				
Positive	13 (14.4)	3 (23.1)	0.8 (0.2–3.5)	0.8
Negative	77 (85.6)	21 (27.3)	1.0	
Trichomoniasis (n = 90)				
Positive	11 (12.2)	2 (18)	0.6 (0.1–3.0)	0.5
Negative	79 (87.8)	22 (28)	1.0	
Bacterial vaginosis (n = 90)				
Positive	39 (43.3)	11 (28.2)	1.3 (0.5–3.4)	0.6
Negative	49 (54.5)	12 (24.5)	1.0	
Indeterminate	2 (2.2)	1 (50.0)	4.4 (0.2–85.2)	0.3

†Two women refused vaginal swab specimen collection.
CI indicates confidence interval; NA = not applicable.

sion as a result of more immature genital tracts, which are susceptible to small vaginal tears during frequent sexual intercourse.[24–26]

Intertwined in the desirability of beer girls are the economics of alcohol consumption in Cambodia. Because customers who can afford to buy alcohol at entertainment venues are typically "well to do," beer girls are perceived as high-class women in comparison with other women who engage in sex work in Cambodia. Consequently, beer girls typically charge up to 25 times more for sexual exchanges than do other sex workers.[27] Beer girls can therefore choose to have fewer clients, with whom they can maintain long-term sexual relationships. However, despite a low number of sexual partners, beer girls remain at very high risk for HIV infection. Notably, 23% of women in our sample who reported only one lifetime partner were HIV-infected. Beer girls, therefore, may feel a greater level of intimacy and attachment to their partners and engage in high-risk behaviors within these partnerships.[28] In this context, a beer girl's risk for HIV infection may be magnified through inconsistent condom use and/or difficulties in negotiating condom use with an intimate partner who may be concurrently engaging in other high-risk partnerships. Even in the era of a successful condom use campaign in the country, it is evident that beer girls are not receiving important prevention messages. Given this, future interventions specifically designed for IDSWs should incorporate condom negotiation skills in HIV prevention messages.

Fig. 1. HIV prevalence by number of months working as a beer girl, Battambang, Cambodia, 2002.[a]

[a] χ^2 test for trend p=0.5

Self-reported STI symptoms were widespread in our study sample and significantly associated with HIV infection. However, few beer girls reported seeking proper medical care for their symptoms. Rather, self-medication and not seeking treatment were more common. These data suggest that current STI programs in Cambodia have had limited effectiveness among IDSWs. This presents a timely opportunity for various stakeholders in the community, including pharmacists, employers, community-based organizations, and the Ministry of Health, to work in parallel to educate women on the benefits of regular sexual health checkups and prompt management of STI symptoms.

Although the rate of participation in this study was high, the sample size was small. Therefore, the estimates gained from this study are vulnerable to imprecision. Furthermore, the results may not be generalizable to other populations of beer girls in different geographic locations as well as other groups of IDSWs in the country. We note, however, that the prevalence of HIV in our sample was comparable with provincial estimates of HIV prevalence found among beer girls in Battambang in 2002.[11] It is likely there was underreporting of high-risk behaviors such as number of sexual partners or history of sex work as a result of social desirability bias, which may underestimate the true population estimates of risk and disease.[29] Finally, inferences from prevalence data are limited in that correlates of incident infections may differ substantially from correlates of prevalent infections. Data on recent HIV infections are therefore needed to develop effective HIV intervention strategies that target the period of highest vulnerability to HIV infection among sex workers.[30,31]

In summary, the results of this study provide a framework for planning future HIV and STI interventions among IDSWs in Cambodia. Most worrisome are the high HIV prevalence, elevated STI prevalence, and high frequency of self-reported risky sexual behaviors among this population. Given the high mobility and rapid turnover among beer girls and other IDSWs in Cambodia, current STI programs and HIV prevention interventions that are intermittently implemented are unlikely to have a major impact in this population. Rather, targeted and frequently repeated interventions specifically designed for beer girls and other IDSWs are urgently needed to prevent new HIV and STI infections and subsequent HIV transmission.

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