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HIV/AIDS RELATED KNOWLEDGE AND RISK BEHAVIORS AMONG FEMALE SEX WORKERS IN TWO MAJOR CITIES OF MONGOLIA

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ABSTRACT

The prevalence of HIV/AIDS in Mongolia is still low. Only 29 HIV/AIDS cases have been registered in Mongolia with a population of 2.6 millions, as of April, 2007. In all of the cases the infection has been sexually transmitted and almost 90.0% of total HIV/AIDS cases have been detected since 2005. Past studies conducted in Mongolia indicated that sexually transmitted infections (STIs) had been spreading rapidly among high risk groups, which highlights an urgent need for prevention mainly targeting these groups. This study was conducted to evaluate HIV/AIDS related knowledge/behaviors, as well as to assess the prevalence of HIV and syphilis among female sex workers (SWs) in two major cities of Mongolia. A total of 342 sex workers (199 females from Darkhan and 143 females from Ulaanbaatar city) with the mean age of 25.8 years participated in the study. In Darkhan, HIV/AIDS related knowledge of SWs was higher (99.0%) and the prevalence of syphilis was lower (3.5%) than in Ulaanbaatar (88.8% and 36.0%, respectively). No new HIV cases among the female SWs have been detected despite high syphilis rates (17.4%) among the study subjects. Although condom use at last sex with paying clients was high (92.3%), the rate was low with non-paying, non-regular sex partners (56.9%). These findings indicated that despite relatively good HIV/AIDS related knowledge, high risk sexual behaviors were still common among the female SWs.

Key Words: HIV, female sex workers, knowledge, risk behaviors, syphilis

INTRODUCTION

Countries where human immunodeficiency virus (HIV) infection is still relatively rare have a window of opportunity to avoid more serious epidemics. In order to control the epidemic, effective investments to prevent the spread of HIV through targeting high risk groups, and actively countering the stigma of HIV and commercial sex work, which hinders addressing risk behaviors, is essential.[1)] Most countries in the Western Pacific Region of the World Health Organization (WHO) have low HIV prevalence but increasing HIV infections among female sex workers (SWs), men who have sex with men (MSM), and injecting drug users (IDUs). This situation is further compounded by high prevalence of sexually transmitted infections and high-risk sexual

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behaviors, which implies a great potential of HIV spread to the general population.[2] One of the effective approaches to mitigate HIV epidemic is to prevent transmission through knowledge improvement and behavior change, especially among the high risk groups.

In Mongolia with a population of 2.6 millions,[3] the HIV epidemic started relatively late. The first case of HIV infection was officially registered in 1992, and another four cases were detected during the following 12 years despite extensive HIV testing of high risk populations (SWs, MSM, IDUs, and mobile population). A sharp increase in the number of reported HIV cases has been observed recently; 24 new cases were diagnosed from March 2005 to April 2007, which suggested an acceleration of the spread of HIV infection in the country.[4,5] In total, 29 HIV cases have been reported in the country as of April 2007. Of the 29 cases, four died of acquired immunodeficiency syndrome (AIDS). Among all reported HIV cases, seven were women who had multiple sex partners, and 15 were MSM. All cases were infected through sexual intercouse.[4,6,7]

Prevalence of sexually transmitted infections (STIs), which increase the risk of HIV transmission by 15–20%, is very high in Mongolia. In 2005, 15,315 cases of STIs were reported, which accounted for 47.4% of all communicable disease cases. Trichomoniasis, gonorrhea and syphilis were 41.6%, 42.8% and 15.6% of all reported STI cases, respectively. The incidence rate of syphilis was 9.37 per 10,000 population.[6]

Commercial SWs and their clients are considered important population groups contributing to the transmission of HIV and other STIs in Mongolia. Although commercial sex is illegal in the country, the number of commercial SWs is increasing. It has been estimated that the number of commercial SWs is increasing.[7] The recent reports documented that syphilis prevalence rate among female SWs ranged from 4.7% to 18.9%.[6,8-10]

There were a very limited number of studies on HIV/AIDS in Mongolia, particularly for populations at high risk. Past studies conducted in Mongolia indicated that STIs had been spreading rapidly among high risk groups, which have highlighted an urgent need for prevention mainly targeting these groups. This study was conducted as a part of the Second Generation HIV Sentinel Surveillance to evaluate HIV/AIDS related knowledge and behaviors among female SWs in two major cities of Mongolia. In addition, it assessed the prevalence of HIV and syphilis among the study subjects.

MATERIALS AND METHODS

The study was carried out in two major cities of Mongolia, Ulaanbaatar and Darkhan city in 2005. Ulaanbaatar, which is the capital city of Mongolia, has the largest population (1.0 million) in the country. Darkhan with a population of 90,000[3] has been implementing a 100% Condom Use Program (CUP) among female SWs and their clients since 2002. The two cities have the largest reported number of female SWs. The 100% CUP in Mongolia include condom promotion activities, increase of availability of condom, voluntary counseling, and testing of STI/HIV.

Female SWs were sampled with the help of non-governmental organizations (NGOs) established by former SWs, who had experiences for this outreach work. Inclusion criteria were females who received money for sex services in the last 12 months. For the study purposes, cluster sampling was used with locations such as bars, nightclubs, and massage parlors serving as clusters. All known clusters were listed, and individuals in the listed clusters were consecutively recruited for the survey. The recruitment continued until the predetermined sample sizes were reached or to eight weeks based on WHO recommendations.[11,12] The sample size was 200 SWs in Darkhan and 400 SWs in Ulaanbaatar. However, the available sample size was not achieved

even after the eight week period of data collection. Individual verbal consent was obtained from all survey participants after informing them about the purpose of the study. Data collection took place over eight weeks from September 15th to November 15th, 2005.

Data collection: Preliminary meetings among key research staff on survey methods and tools, and a two-day training for research assistants and supervisors was conducted with the technical support from WHO. The objective of the training was to standardize data collection and to orient all involved in the study. The training covered criteria for selection of the sites, recruitment of survey participants, questionnaire administration, blood sample collection, labeling, coding, confidentiality and ethical issues, supervision and quality assurance procedures. Questionnaires were developed and pre-tested to ensure that the questions and questionnaire administration techniques were appropriate. Female SWs were interviewed by trained female interviewers.

The information was collected on socio-demographic characteristics, behavioral risk factors, and knowledge of HIV prevention methods. The core set of questions focused on behaviors that created the greatest risk of HIV transmission, including number and type of sexual partners, condom use, drug use, knowledge of HIV prevention methods, beliefs about HIV transmission, and access to voluntary HIV testing.

Specimen collection and laboratory testing: Blood samples were obtained by physicians and nurses, and were tested for the presence of antibodies to HIV locally using rapid tests. Reactive specimens were sent to the National Center for Communicable Diseases (NCCD) for confirmation using two different Enzyme-Linked Immunosorbent Assays (ELISA). Screening and confirmation tests for syphilis were performed locally using Qualitative Rapid Plasma Reagin (RPR) and Treponema Pallidum Hemagglutination Assay (TPHA), respectively.

Data analysis: Data were entered using SPSS, and cleaned by examining inclusion criteria, distributions, range checks, consistency checks and summary measures. After data cleaning 342 questionnaires out of 380 (180 in Ulaanbaatar and 200 in Darkhan) were included in data analysis. The main reason for exclusion was clearly facetious answers. Data analysis was performed using SPSS (version 15.0 for Windows) and STATA (version 7.0). Associations between categorical data were examined using chi-square tests.

RESULTS

Sociodemographic characters: A total of 342 SWs participated in the study, of whom 199 (58.2%) were female SWs from Darkhan city and 143 (41.8%) female SWs were from Ulaanbaatar (Table 1). The mean age of the study participants was 25 years. Half (50.6%) of SWs were 25 years old or younger. Around two-thirds of SWs had completed secondary school. A quarter of study participants had at least 8 years of schooling, and a small percentage had no schooling, primary education or completed college/university. The median age at first intercourse was 18 years. Of the female SWs, 80.5% were single, and 5.0% married. Female SWs had on average six clients per week and two clients on the last day selling sex. Concerning the occupation of the clients, the question "What is the most frequent occupation of your paying partners during the last 12 months?" was used, to which 40.6% answered that their most frequent clients were truck drivers/mobile traders. In particular, mobile traders and truck drivers have been reported as the most frequent clients by 49.8% of SWs in Darkhan, compared to 28.0% of SWs in Ulaanbaatar. Government workers, businessmen, and tourists/foreigners accounted for 17.5%, 15.5% and 1.5% of the clients in the last 12 months, respectively. Most participants earned between 10,000–50,000 tugrugs (approximately USD 10–50) per week selling sex. Over a quarter of SWs earned more than 50,000 tugrugs a week. The number of SWs, who earned more than 50,000 tugrugs per

Table 1 Sociodemographic characteristics of female sex workers (SWs) in Darkhan and Ulaanbaatar.

Characteristics	Darkhan	Ulaanbaatar	All
Number of female sex workers surveyed	199 (100%)	143 (100%)	342 (100%)
Mean/median age in year	25.4 / 24	23.9 / 23	25 / 24
Percentage of SWs aged 25 years or younger	48.2%	53.8%	50.6%
Education/			
No schooling	8 (4.0%)	–	8 (2.3%)
Primary (4 years)	10 (5.0%)	7 (4.9%)	17 (5.0%)
Incomplete secondary (8 years)	26 (13.1%)	60 (42.0%)	86 (25.1%)
Complete secondary (10years)	147 (73.9%)	73 (51.0%)	220 (64.3%)
College/university	8 (4.0%)	3 (2.1%)	11 (3.2%)
Marital status			
Married	11 (5.5%)	6 (4.2%)	17 (5.0%)
Single	172 (86.2%)	104 (72.7%)	276 (80.7%)
Separated/divorced/widowed	16 (8.3%)	33 (23.1%)	49 (14.3%)
Number of clients per week			
Mean/median	4.6 / 3	8.7 / 6	6.38 / 4
Number of clients on the last day selling sex			
Mean/median	1.6 / 1	2.2 / 2	1.9 / 2
Occupation of the most frequent clients			
Government workers	32 (16.1%)	28 (19.6%)	60 (17.5%)
Soldiers/policemen	7 (3.5%)	5 (3.5%)	12 (3.5%)
Businessmen	29 (14.6%)	24 (16.8%)	53 (15.5%)
Mobile traders/truck drivers	99 (49.8%)	40 (28.0%)	139 (40.6%)
Tourists/foreigners	1 (0.5%)	4 (2.8%)	5 (1.5%)
Others	11 (5.5%)	35 (24.5%)	46 (13.5%)
Don't know	20 (10.1%)	7 (4.9%)	27 (7.9%)
Earnings per week (tugrug)			
<9999	35 (17.5%)	2 (1.4%)	37 (10.9%)
10000–19999	40 (20.1%)	10 (7.0%)	50 (14.6%)
20000–29999	36 (18.1%)	15 (10.5%)	51 (14.9%)
30000–39999	39 (19.6%)	22 (15.4%)	61 (17.8%)
40000–49999	21 (10.6%)	27 (18.9%)	48 (14.8%)
>50000	26 (13.1%)	65 (45.5%)	91 (26.6%)
Don't want to answer	2 (1.0%)	2 (1.4%)	4 (0.4%)

The percentage of subjects is given in parenthesis. *One thousand tugrug is nearly equal to USD 1.

week was higher ($p<0.001$) in Ulaanbaatar (45.5%) than in Darkhan (13.1%).

Disease prevalence: A total of 342 female SWs were tested for HIV. None of the samples were confirmed to be HIV positive, giving an HIV seroprevalence of zero in this group. Of 342 female SWs, 17.4% tested positive for syphilis and there was a highly significant ($p<0.001$) difference in syphilis prevalence between SWs from Ulaanbaatar (36.0%) and Darkhan (3.5%).

HIV/AIDS related knowledge: General awareness about HIV/AIDS was very high with more than 90.0 % of participants having heard of HIV/AIDS (Table 2). There was no significant difference in general awareness level between different sites and ages. Comprehensive knowledge

Table 2 Knowledge about HIV/AIDS in female sex workers (SWs) in Darkhan and Ulaanbaatar, 2005.

Characteristics	Darkhan	Ulaanbaatar	All
Have heard of HIV/AIDS	99.0% (96.4–99.9)*	88.8% (82.5–93.5)	93.3% (91.8–96.9)
Abstinence can reduce risk of HIV transmission	71.9% (65.1–77.9)	42.7% (39.1–56.1)	60.2% (55.0–65.4)
Having sex with one faithful, uninfected partner can reduce risk of HIV transmission	93.5% (89.1–96.5)	74.1% (66.1–81.1)	85.4% (81.6–89.1)
Using condoms can reduce risk of HIV transmission	98.5% (95.6–99.7)	86.0% (79.2–91.2)	93.3% (90.6–95.9)
Knowledge of the above three ways of preventing sexual transmission of HIV**	68.3% (61.4–74.7)	34.9% (27.2–43.4)	54.4% (49.1–59.7)
HIV cannot be transmitted through mosquito bites	74.9% (68.3–80.7)	51.0% (42.6–59.5)	65.3% (60.2–70.4)
HIV cannot be transmitted through sharing meals, toilet facilities with an infected person	68.8% (61.9–75.2)	47.6% (39.1–56.1)	59.9% (54.7–65.1)
A healthy-looking person can have HIV	79.4% (73.1–84.8)	34.3% (44.6–61.5)	60.7% (55.5–65.9)
Percentage of female SWs who have correctly rejected the above three misconceptions about HIV transmission**	43.7% (36.7–50.9)	11.1% (6.5–17.5)	30.1% (25.3–35.0)
Percentage of female SWs who both correctly identified ways of preventing sexual transmission of HIV and rejected major misconceptions about HIV transmission**	42.7% (35.7–49.9)	10.5% (5.9–16.7)	29.5% (24.6–34.4)
Percentage of female SWs who have ever received HIV testing and who know the results	55.3% (48.1–62.3)	50.3% (41.8–58.8)	52.9% (47.6–58.2)
Percentage of female SWs ever attended HIV prevention programs	72.4% (65.6–78.5)	51.7% (43.2–60.2)	63.7% (58.6–68.8)

* In parenthesis is 95% confidence interval.

** These percentages were a summary of several questions calculated by the method described in the reference 21

on prevention of sexual transmission of HIV was low, with only 54.4% of female SWs correctly identifying three ways: abstain, be faithful, and condom use (ABC) of preventing sexual transmission of HIV. The difference in the level of knowledge was significantly higher ($p<0.001$) in Darkhan (68.3%) than in Ulaanbaatar (34.9%). Similarly, a low proportion of participants (30.1%) had correctly rejected major misconceptions about HIV transmission. The SWs in Darkhan were more likely to correctly reject major misconceptions about HIV (43.7%) than the SWs in Ulaanbaatar (11.1%) ($p<0.001$). The percentage of SWs who both correctly identified ways of preventing sexual transmission of HIV and rejected major misconceptions about HIV transmission was 29.5%. This indicator was higher in Darkhan city (42.7%) compared to Ulaanbaatar (10.5%) ($p<0.001$). The percentage of SWs who have reported ever receiving HIV testing, and attending HIV prevention programs, was 52.9% and 63.7%, respectively.

Risk behaviors: Condom use at last sex with paying clients was quite high (92.3%) (Table 3). However, it was much less common with non-paying sex partners. Of the surveyed SWs, 56.9% used condom at last sex with a non-regular non-paying partner, and 47.4% reported condom use

Table 3 Risk behaviors of female sex workers (SWs) in Darkhan and Ulaanbaatar, 2005.

Characteristics	Darkhan	Ulaanbaatar	All
Median and range of age at first sex	18 10–24	18 10–23	18 10–24
Condom use at last sex with paying client	89.1% (84.7–93.5)	96.5% (93.5–99.5)	92.3% (89.4–95.1)
Condom use at last sex with non-regular non-paying partner	63.5% (55.4–71.6)	41.4% (28.7–54.1)	56.9% (50.0–63.9)
Consistent condom use with non-regular non-paying partners in the last 12 months	7.5% (3.0–11.9)	18.2% (8.0–28.4)	10.6% (6.2–15.0)
Condom use at last sex with regular partner	56.5% (47.1–65.8)	11.1% (0.0–23.0)	47.4% (39.0–55.8)
Consistent condom use with regular partners in the last 12 months	13.1% (6.7–19.5)	3.7% (0.0–10.8)	11.2% (5.9–16.5)
Percent of SWs who have ever used injecting drugs	0.5% (0.0–1.6)	0.0% (–)	0.3% (0.0–0.9)
Alcohol use in the past month			
Everyday	0.5%	1.4%	0.9%
More than once a week	13.1%	28.7%	19.6%
Less than once a week	54.8%	47.6%	51.8%
None	28.1%	19.6%	24.6%

In parenthesis is 95% confidence interval.

at last sex with regular non-paying partner. Consistent condom use with non-paying partners was even lower at 10.6% with non-regular and 11.2% with regular partners. One (0.3%) of 342 SWs reported injecting drug uses in the past. Alcohol drinking less than once a week in the past month was reported by 51.8% of the SWs.

DISCUSSION

The present study did not detect any HIV cases among the female SWs, while the prevalence of syphilis was quite high. There was a highly significant ($p<0.001$) difference in the syphilis prevalence between the SWs from Ulaanbaatar (36.0%) and Darkhan (3.5%). In the latter, the reduction of syphilis prevalence was demonstrated by other similar surveys;[5] from 26.0% in 2002 to 18.0% in 2003, 14.0% in 2004, and 3.5% in 2005. Meanwhile, no similar reduction was observed in Ulaanbaatar (26.7% in 2002, 12.7% in 2003, 37.0% in 2004, and 36.0% in 2005). Such a difference could be attributed to the implementation of 100% CUP among SWs and their clients in Darkhan since 2002. The program was not implemented in Ulaanbaatar. Therefore, these findings indicated the importance to expand and strengthen the 100% CUP using the lessons learnt from Darkhan city.[13]

Our study demonstrated that a comprehensive knowledge on HIV prevention was poor, although the general awareness about HIV and its transmission was quite satisfactory.[14] Relatively better knowledge among the SWs from Darkhan could be the result of intensive health education programs conducted together with 100% CUP. As a consequence of low education of female

SWs demonstrated by the fact that 67.5 % of the subjects had completed secondary school, they often face difficulties in finding jobs to earn enough money for everyday needs.[15] According to the statistics in Mongolia, women who completed secondary school were 96.7% in 2004. However, school enrollment and basic education of SWs was not low, which could be regarded as an advantage in the efforts to improve their health education.

The finding that the main clients of SWs were mobile population groups, like truck drivers and mobile traders, is comparable to the findings of similar studies in other countries.[14-16] Therefore, educational programs aiming at behavior changes[17] of mobile traders and truck drivers could potentially reduce the risk of HIV/STI transmission from and to SWs.

Our study indicated that although condom use with paying clients was relatively high, it was less common with non-paying non-regular partners, which could potentially increase the risk of HIV transmission.[18] Despite knowledge that condoms can reduce the risk of HIV transmission, condom use with paying partners remained lower among female SWs in Darkhan (89.1% vs 96.5%, $p<0.05$). This finding indicated that only information provision may not be effective to cause behavior changes. Another interpretation is that only good-manner SWs in Ulaanbaatar might have participated in the study, resulting in the higher condom use with paying clients in Ulaanbaatar than in Darkhan.

Drug and alcohol use are typically associated with increased risky sexual behavior.[8,19] Our study showed that drug use was very low among the female SWs, but alcohol consumption was quite common. Such a high rate of alcohol consumption among the SWs could also contribute to STI/HIV transmission.

Since the present study was based on volunteer female SWs, rather than a randomly sampled subjects, the study participants could not be considered as representative of the general population of female SWs, although they were sampled from all possible locations such as streets, bars, nightclubs, and massage parlors so as to achieve generalizability of the findings. The number of female SWs who had originally participated in the survey were 200 (100% of planned sample size) in Darkhan and 180 (45% of the planned sample size) in Ulaanbaatar. The fact that the participating rates differ considerably between two cities may raise a possibility that potential selection bias exists in the samples of both cities. There was also a possibility that HIV positive SWs were did not participate intentionally since interviews were taken on a voluntary basis. Another limitation of this study was the inability to test for other STIs.

In the present analysis, we had described the proportions of HIV/AIDS related knowledge, the behaviors, and the prevalence of syphilis. Using such ecological level data, we had inferred their possible links. Future studies to examine these associations by utilizing individual level data, or to formally compare these variables between two cities with cautious consideration of potential confounding factors such as educational background or marital status of SWs are warranted. But even from the present study, intervention to efficiently modify behaviors of the populations at high risk of infection and transmission to the population are suggested to be urgently needed although these future researches would lead us to more effective measures to contain the future epidemics.

This is especially important in the view that existing prevention programs appear to have limited effect as suggested by low level of comprehensive knowledge on HIV and persistent levels of risk sexual behaviors of SWs, which are likely to sustain HIV/STI transmission and to preclude a decline in the level of infection in the country.

In conclusion, findings of the current study indicated that despite relatively good HIV-related knowledge, risk behaviors associated with sexual transmission of HIV were still common among the female SWs in Darkhan and Ulaanbaatar. The 100% CUP seemed effective in Darkhan with increasing HIV related knowledge of SWs and reducing prevalence of syphilis. Effective preven-

tive programs should be conducted not only among SWs, but also among their main clients, including truck drivers and mobile traders.

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