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Knowledge, behavior and seroprevalence towards HIV infection among female sex workers in Yucatan, Mexico.

Original Article

Renán A. Góngora-Biachi, Norma Pavía-Ruz, Ligia Vera-Gamboa, Pedro González-Martínez, Javier Flores-Abuxapqui, William Moguel-Rodríguez, Dora Lara-Perera, Gabriela Alonso-Salomón.

Centro de Investigaciones Regionales “Dr. Hideyo Noguchi”, Universidad Autónoma de Yucatán, Mérida, Yucatán, México.

SUMMARY.

OBJECTIVES. To evaluate the knowledge of and behavior towards infection by HIV, and to identify the risk factors and prevalence of HIV among female sex workers (FSW) in Yucatan, Mexico.

METHODS. Longitudinal analysis of data from an open-enrollment cohort was carried out. A clinical evaluation, epidemiological questionnaire and detection of antibodies for HIV was applied to 100 FSW in Yucatan, Mexico, every four months from January 1998 to July 1999.

RESULTS. The average age was 32 (18-47). 69% were illiterate. 12% had contact with foreigners, tattoos and anal intercourses 14%, blood transfusions 8%, and oral sex 15%. Sexually transmitted diseases showed a prevalence of 45% and genital ulcers of 7%. Only 16% of the women used a condom in all of their sexual relations; 84% of the women knew of preventative measures; 10% had undergone some effective behavioural change; 92% of the group recognized that they could acquire HIV through their sexual practices. The prevalence of infection by HIV

was null in the first evaluation and the cumulative incidence was 1%.

CONCLUSIONS. We found the information about AIDS, preventative measures and changes in behavior to be inadequate in the group studied. In spite of the lack of knowledge and use of preventative measures for HIV, the incidence and prevalence for infection were low and represent an opportunity to design informative and preventative intervention programs for this group of the population.

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Key words: HIV, AIDS, female sex workers, sexually transmitted diseases, condom, Yucatan Mexico.

RESUMEN.

OBJETIVOS. Evaluar los conocimientos y actitudes hacia la infección por VIH, e identificar factores de riesgo y la prevalencia de VIH en sexotrabajadoras (ST) en Yucatán, México.

MÉTODO. De Enero 1998 a Julio 1999, se realizó un estudio longitudinal en una cohorte de 100 ST,

Corresponding address: Renán A. Gongora-Biachi, MD, Centro de Investigaciones Regionales “Dr Hideyo Noguchi”, Universidad Autónoma de Yucatán, Avenida Itzáes No 490 x 59, C.P. 97000, Mérida, Yucatán, México. Phone (52) 99-928-41-57 FAX: (52) 99-923-61-20 E-mail: gbiachi@tunku.uady.mx.

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RA Góngora-Biachi, N Pavía-Ruz, L Vera-Gamboa, P González-Martínez y col.

que ejercían en Yucatán, México, obteniendo cada 4 meses y en 3 ocasiones diferentes una evaluación clínica, un cuestionario epidemiológico y detección de anticuerpos contra VIH.

RESULTADOS. La edad promedio fue de 32 años (18-47). La historia de infecciones de transmisión sexual fue de 45% y de úlceras genitales de 7%. Sólo 16% de las mujeres usaban condón en todas sus relaciones sexuales; 84% de ellas conocían las medidas preventivas, pero solo el 10% había realizado algún cambio de comportamiento efectivo; 92% del grupo reconoció que podría adquirir la infección del VIH por sus prácticas sexuales. La prevalencia de infección por VIH fue nula en la primera evaluación y la incidencia acumulada fue de 1%.

CONCLUSIONES. La información acerca del SIDA, las medidas preventivas y cambios en el comportamiento fueron inadecuados en este grupo de estudio. A pesar de la falta de conocimientos y el uso de medidas preventivas para VIH, la prevalencia e incidencia de la infección del VIH (0% y 1%) representan una oportunidad para insistir en campañas preventivas en contra de la infección del VIH en este grupo de ST. (*Rev Biomed 2002; 13:257-263*)

Palabras clave: VIH, SIDA, trabajadoras sexuales, enfermedades de transmisión sexual, condón, Yucatán, México.

INTRODUCTION.

Female sex workers (FSW) are vulnerable to infection by the human immunodeficiency virus (HIV), due to their risky sexual practices, their multiple and anonymous sexual partners and their inconsistency in the use of preventative measures. Therefore, female prostitution is an important factor for HIV transmission in countries like Central Africa (Kenya, Uganda, Zambia, Rwanda, The Ivory Coast), Brazil and Thailand (1). A study carried out on FSW in Nairobi, showed there was an increase in HIV infection from 4 to 61% (2), between 1981 and 1985. A similar situation was found in Thailand, where infection by HIV in FSW began in 1989 (3), increasing to 44% in 1990 (4). The first studies in the United States of

America from 1985 to 1987, reported a prevalence ranging between 0 and 57% (1,5). It was only in Miami, that the prevalence of HIV infection among FSW was between 20 and 26% at that time, increasing to 39% between 1987 and 1990 (6).

In Mexico, during the period 1990 to 1995, HIV seroprevalence among sex workers increased from 0.04% to 0.7% (7-9) and until December 31, 1998, HIV prevalence in FSW continued without any variation (0.35%) in relation to the total number of AIDS cases in women over 15 (10).

In Yucatan Mexico, the prevalence of HIV infection was between 0 and 0.4%, during 1987 to 1992 (11-13). The low prevalence of infection in this group represents an opportunity to carry out campaigns to prevent the spreading of HIV among these women. This paper evaluates the knowledge of, behavior towards, and the identification of risk factors for HIV infection in a group of FSW in Yucatan, Mexico and identifies the socio-cultural factors associated to the practice of female prostitution. We also report the prevalence and cumulative incidence of HIV infection and other sexually transmitted diseases (STD) in this group of sex workers.

METHODS.

On receiving authorization from the Bioethical Committee at the Centro de Investigaciones "Dr. Hideyo Noguchi" and an informed written consent from each participant, a clinical-epidemiological study was carried out from January 1998 to July 1999, on 114, non-intravenous female drug users, who had practiced commercial sex in Yucatan for at least 6 months prior to the beginning of the study and had gone to the Department of Sexually Transmitted Diseases in the Health Department in Merida, Yucatan, Mexico. This Health Department is the unique Medical Center where the sex workers are taking care and during the lapse of the study 114 sex workers were attended. More of them (>95%) were from low social-economic status.

Every 4 months and during one year a clinical-epidemiological questionnaire was applied to obtain the socio-demographic characteristics of the sex

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workers, including migratory movements. The presence of factors identified as known risk factors for HIV infection were also investigated. A complete physical exam was given to all the women, and 10 mL of venous blood was obtained from the women to determine the presence of antibodies against HIV (anti-HIV), by enzyme-linked immunosorbent assay (ELISA) using synthetic peptides (Genie II HIV-1/HIV-2, Sanofi Pasteur, Marnes la Coquette, France). All positive results were confirmed by Western blot (WB) (New Lav Blot I, Sanofi Pasteur, Marnes la Coquette, France) according to the CDC criteria (13). Antibodies against *T. Pallidum* were determined through the agglutination of particles of cardiolipin absorbed to carbon.

At the same time a pelvic exam was performed to obtain a cervical sample to carry out Giemsa stain and direct microscopic examination of the tissue scrapings to look for typical intracytoplasmic inclusions, suggestive of diagnosis of *C. trachomatis*, as well as the presence of *T. vaginalis* and *C. albicans*. Specific cultures were carried out to detect the presence of *Gardenella vaginalis* (Blood Agar), *C. albicans* (Biggy Agar), *N. gonorrhoeae* (Thayer-Martin) as well as vaginal cytology.

The analysis of the information was carried out using the statistic program Epi Info 6, version 6-04a (CDC). The frequencies of the variables surveyed was obtained and were compared in relation to the level of education of the women: "literate" (complete primary education, secondary education or secretarial studies) vs "illiterate" (unable to read or write or with incomplete primary education) through the Chi-squared test or the exact Fisher test. Prevalence and cumulative incidence of HIV infection and STD were also obtained.

RESULTS.

Only 100/114 (88%) completed the study (13 sex worker had only one or two interview and the other one changed her residence after the first evaluation). Ninety nine percent of this group of FSW lived permanently in the Yucatan Peninsula (91% in the state of Yucatan, 8% in the state of Campeche),

and one woman (1%) was from Guatemala. The average age of the group was 32 (18-47). But 10% of them began the practice of prostitution as young as 14 or 15 years old. 69% were illiterate and 31% were literate. Forty-five women (45%) had a permanent partner (married or living together), thirty-two women (32%) had had permanent partners (divorced, separated or widows) and 23% were single. When asked about their occupation 74% said they were housewives, the rest said they held paying employment, only six of them recognized prostitution as a labor activity.

As induced factors of the practice of prostitution, 94% named economic problems as the main inclusive factor and 6% practiced it as a labor activity for "sexual pleasure". The time span of practicing prostitution was from 2-28 years (average 7 years), the average of number of sexual partners per month was 46 (2-200 partners per month) and the average monthly income from this activity was 200 USD. 51% of these women solicited clients in brothels, 40% from the street and 9% in night-clubs, hotels and bars.

Table 1 describes the characteristics of the risk

Table 1
Sexual practices and risk factors for infection by HIV in female sex workers in the state of Yucatan, Mexico (n=100).

VARIABLE	number and %
Frequency of use of condom:	
Always	16
In more than 50% of sexual contacts	42
In less than 50% of sexual contacts	32
Never	10
Background of STD*	42
Background of genital ulcers	7
Oral sex	15
Anal sex	1
SI [†] with foreigners	12
SI [†] with bisexuals men	5
SI [†] during menstruation	4
Use of non-disposable syringes	9
Background of blood transfusions	8
Presence of tattoos	8

*STD= Sexually transmitted diseases. † SI = Sexual intercourses.

factors for HIV infection in this group. It may be observed that the infrequent use of a condom (84%) and a record of STD/genital ulcers predominate (49%). The most common reason for not using the condom was the clients refusal (64%).

Table 2 shows the previous STD mentioned by the women and diagnosed by medical staff. The prevalence of background of STD was 42%. Among others, syphilis was found in 13% and gonorrhoea in 20%; three women reported more than one STD (prevalence of 42%). In contrast, during the study the results of the cervix exudate, reported *T. vaginalis* in 8%, intracytoplasmatic inclusions (suggesting *C. trachomatis*) in 10% and *G. vaginalis* in 12%. The cultures for *N. gonorrhoeae* and *C. albicans* were negative. The results of the test for the determination of antibodies against *T. pallidum* was negative in all of the sex workers. So, the cumulative incidence of STD was 30%. The results of the vaginal cytology, were negative for displasia and/or malignancy in 87 women; there was insufficient material in the remaining 13.

The aforementioned variables were analyzed and the level of education illiterate (n= 69) and literate (n=31) were compared, no significant statistic difference was found between the two groups, except for the use of a condom in more than 50% of sexual practices illiterates 34/69(49%) vs literates 24/31(77%), (p= 0.008).

Referring to knowledge about AIDS, 61% gave an adequate reply to the question asking for three or four of the most important mechanisms of transmission of HIV (sexual, blood, intravenous drug use and mother to child transmission routes); 18% gave an insufficient reply (one or two mechanisms) and 21% didn't give an adequate reply (none of the mechanisms in question); 15% of the women held mistaken ideas about the mechanisms of transmission, like the use of swimming pools, kissing, cuddling, sharing of personal belongings, "using a condom doesn't work" and "oral sex is safe"; 84% were aware of some preventative measure (use of the condom, sterile syringes, safe blood and monogamy) and 66% reported some change in behavior with the intention of preventing HIV

Table 2
Sexually transmitted diseases in female sex workers in the state of Yucatan, Mexico (n=100).

VARIABLE	number and %
Background of STD*:	
Syphilis	13
Gonorrhoea	20
Genital herpes	2
Chondilomatosis	2
Trichomoniasis	3
Candidiasis	5
Background of Genital ulcer	7
Presence of STD*:	
Trichomoniasis	8
<i>G. vaginalis</i>	12
Intracytoplasmatic inclusions [†]	10

* Prevalence of background of STD = 42%. Cumulative incidence of STD=30%.

†Suggesting *C.trachomatis*.

infection, but there was an effective behavioral change in only ten percent of the women (avoid sexual relations with bisexuals and homosexuals, avoid sexual relations with foreigners, avoid anal and oral contact). 92% of them recognized that they could acquire HIV through the practice of prostitution.

The prevalence of the anti-HIV was null in the first evaluation of this group and the cumulative incidence during the study was 1%. This case corresponded to a 27-year-old woman living in Merida Yucatan. In June 1998, the ELISA was positive for Anti-HIV, which was confirmed by WB (bands p24, g41 and gp120-160). The lymphocyte CD4 count was 504/L. The patient was asymptomatic and without any sign of disease and was therefore considered to be in A1 class for HIV-1 infection according to the CDC classification (14). The rest of the women consistently showed negative results for HIV in all the subsequent determinations, and during the interview exams none of the women presented any systemic disease nor any of the clinical manifestations associated with HIV.

DISCUSSION.

Our results showed that the prevalence of HIV

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infection in this group of non intravenous drug-addicted sex workers in Yucatan, Mexico during the first months of 1998 was null and the acumulative incidence was very low (1%). These results were similar to those reported from 1985 to 1994 in same region (11-13), and from 1990 to 1995 (15) in Mexico and suggests that until then HIV infection had occurred very slowly in this high risk population.

The economic factor takes first place as a reason to start the practice of prostitution which could explain the spouse's tolerance to prostitution (45% of these women had a stable partner and 74% were house wives). All the women practiced commercial sex in Merida Yucatan, but 8% lived permanently in the neighboring state of Campeche, and one of the women was from Guatemala. This fact reflects the phenomenon of migration which has become an option in the search for income, but at the same time it's a factor which allows for the spreading of HIV infection, as has been postulated (16).

On considering the average age and the age range of the women studied and the length of time they have been practicing prostitution it can be deduced that at least 10% began this activity as young as 14 or 15 years old. The early start in commercial sex implies a greater number of partners and greater risk for STD, including AIDS. In fact, if the number of partners per month is considered, this number alone represents an inherent risk for being infected by a STD, the results are evidence of this fact since the prevalence of background STD and/or genital ulcers was 49%.

If other risk factors for HIV infection, apart from the number of partners are considered (such as the inconsistent use of the condom, the practice of oral and anal sex, sexual relations with foreigners-considering it to be an additional risk factor if the person comes from an area with a high prevalence of intravenous drug addiction, tattoos and the use of non-disposable syringes), it is undoubtable that the studied group has the risk factors for HIV infection if their sexual partners are infected, as well as the conditions to be effective transmission vectors of this virus. Adding to these considerations, the frequency of STD is also significant, since these favour an increase in the risk of

infection by HIV by 2 to 10 times (17). The majority of women in our study corresponded to a low socioeconomic level, with little or no access to health services and a deficient level of education, facts that make them vulnerable to HIV infection.

One indisputable fact is the use of a condom to prevent HIV infection (18). Studies carried out among female sex workers from Thailand (19) show the importance of educational interventions designed for sex workers to prevent HIV infection. In our group, just like those reported by other authors (20), an inconsistent use of a condom was reported in 84% of the women. However, among the reasons for not using a condom was refusal by the client (64%) and fear of losing the client on proposing its use (1%). We believe that other reasons such as personal rejection (3%) and ignorance of its use (4%) reflect the educational level of these sex workers, since the use of a condom was more frequent among the better educated women. It is important to consider the low educational level when designing preventative strategies promoting an increase in the use of condoms.

If it is considered that the most effective preventative campaign will be the one the woman can do herself, and if a significant number of women still do not know or know very little of the transmission mechanisms, it is understandable that as a consequence, they do not know of the preventative measures (16%) or do not consistently use the condom (84%) which has impeded an effective modification of the attitudes towards protection against HIV infection, even though 92% of this group of women recognized they could become infected with HIV through their practice of prostitution.

Despite all the favorable conditions for HIV infection in this group of FSW, these women did not become infected during the lapse of the study. We believe this is due to two reasons: 1) the epidemic in Yucatan Mexico is spreading among the homosexual and bisexual men but the low frequency of contact between these groups and the FSW has impeded their contamination. 2) The absence of intravenous drug addiction has also impeded the spreading of HIV among FSW or their intravenous drug-addicted

heterosexual partners.

It is important to reinforce and continue the preventative campaigns in this group of the population especially when considering the relationship between prostitution and HIV is not a static one and that the very same characteristics of female prostitution define this as an ideal mechanism for the dissemination of HIV when this virus affects this population, as has occurred in other countries (6, 19, 21, 22). The fact that the prevalence of HIV in the population of female prostitutes who work in Yucatan is very low, represents an unique opportunity to insist on creating preventive intervention compaigns for this group of women.

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