

ORIGINAL ARTICLE

Prevalence and risk of HIV infection among female sex workers in Burkina Faso

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Summary: Little information is available regarding human immunodeficiency virus (HIV) infection among female sex workers (FSW) in Burkina Faso, West Africa. A cross-sectional study was conducted in Ouagadougou and Bobo-Dioulasso, the 2 largest cities of the country, to determine the prevalence of HIV infection and other sexually transmitted diseases (STDs) among FSWs, and to investigate the factors which were associated with HIV infection in this population. From October to November 1994, 426 FSWs were recruited. The method of anonymous and unlinked HIV screening recommended by the World Health Organization (WHO) was used. The overall HIV seroprevalence was 58.2% (95% confidence interval: 53.4–62.9) and 52.6% of FSWs had at least one STD agent. The most common STDs were trichomoniasis (23%), syphilis (15%) and gonorrhoea (13%). In a logistic regression analysis, risk factors for HIV infection were high gravidity (≥ 2 pregnancies), low perception of personal risk of HIV infection, syphilis and the presence of genital warts. These results suggest that FSWs in Burkina Faso need better information about HIV transmission and prevention and then need better access to STD detection and management services.

Keywords: HIV infection, FSW, prevalence, risk factors, Burkina Faso

INTRODUCTION

Female sex workers represent a high-risk group for HIV infection and transmission¹. In developing countries, cross-sectional studies conducted from 1990 to 1993 showed rates of HIV infection ranging from 1% to 62% among FSWs in Africa and from 1% to 45% among those working in Asia^{2,3}. In 1995, nearly 80% of FSWs in Abidjan (Côte d'Ivoire) were infected with HIV⁴. The prevalence of STDs is also high among FSWs, and this makes them more vulnerable to HIV infection⁵. The role of FSWs in the spread of HIV infection has been well documented^{1,6,7}. Hence interventions to promote condom use and STD detection and management are increasingly focussed on this group^{8–10}.

In Burkina Faso, few data are available about the HIV epidemic in the general population, in high-risk groups, and in FSWs. The only available survey carried out in 1990–1991 amongst FSWs in Bobo-Dioulasso, the second city in Burkina Faso, showed the prevalence of HIV infection to be as high as 45% (S. Lankoandé, personal communication). This paper reports results from a cross-sectional survey conducted from October to November 1994 to study the prevalence of HIV infection and other STDs among FSWs. The study also aimed to identify factors associated with HIV infection that might be susceptible to intervention.

METHODS

A cross-sectional study was conducted at each municipal hygiene clinic of the 2 largest cities of Burkina Faso to recruit FSWs. In 1994, Burkina Faso, in central West Africa, had a population of

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around 10 million. Ouagadougou, the capital city, has a population of around 800,000 inhabitants. Bobo-Dioulasso has a population of around 350,000. In Burkina Faso, prostitution is officially prohibited but is nevertheless tolerated. FSWs are required to undergo a medical check-up each 3 months in the municipal hygiene clinics. The object of the medical visit is to screen for and treat STDs. However, a number of FSWs reported that no testing for STDs was routinely performed. There are 3 types of FSWs in Burkina Faso. The first, often termed 'prostitutes', who wait for their clients outside their 'studio'. The second group are bar workers who leave with their clients at closing time. The third group are mobile, looking for clients on the street, in hotels, bars and nightclubs. In this study we were able to contact members of the first 2 groups who are organized in groups with recognized leaders. We contacted the leaders to explain the objects and methods of the study. Leaders were told that participants would be offered a free medical consultation for STDs and that any STDs detected would be treated free of charge. HIV or AIDS was not mentioned. The leaders then asked for volunteers to present themselves at the study clinics.

After obtaining informed consent, a questionnaire regarding demographic characteristics, medical history and sexual behaviour was administered by a midwife, and a physical examination, including pelvic examination, was performed by a physician. FSWs were screened for genital tract infections by vaginal wet mount and direct microscopy for *Trichomonas vaginalis* and *Candida* species, cervical Gram stain, vaginal pH, vaginal Gram stain for bacterial vaginosis, endocervical culture for *Neisseria gonorrhoeae*, and endocervical swab for *Chlamydia trachomatis* antigen detection (Microtrak-II[®], Syva Company, San Jose, California, USA). Chlamydial infection was confirmed by a blocking assay using reagents from the same manufacturer. A 10 ml blood sample was collected for syphilis screening. The method of anonymous and unlinked serological screening of HIV infection, as recommended by WHO, was used¹¹. Each FSW was given a follow-up appointment 48 h later when she was given the result of the genital tract infection screening and provided with free treatment when tests were positive. All participants were provided with risk reduction counselling, and free condoms. The study design was approved by National AIDS Control Committee.

Blood samples were divided into 2 aliquots. The first was used for syphilis serology, performed in each centre. The second, stored at 4°C, was transferred to the national reference laboratory of the National AIDS Control Committee in Ouagadougou. Syphilis serology was performed using the rapid plasma reagent (RPR) slide test (Becton-Dickinson Microbiology System, Cockeysville, Maryland, USA). All sera reactive with the RPR test were then analysed using the *Treponema pallidum* haemagglutination assay (TPHA)

(Fujirebio, Tokyo, Japan). A positive result with both RPR and TPHA was considered indicative of active syphilis. When the recruitment of women had ceased and all syphilis cases had been treated, all the registers containing the names of FSWs were destroyed. No remaining documents (questionnaires, laboratory records) carried women's names. Only then was the HIV diagnosis performed. All sera were first tested with a mixed ELISA (Genelavia[®] Mixt, Sanofi Diagnostics Pasteur, Paris, France). All reactive sera were retested with a rapid test (VIH Spot[®] HIV-1/HIV-2) (Diagnostic Biotechnology, Singapore). Sera reactive with both tests were considered HIV positive. Discrimination between HIV-1 and HIV-2 infections was performed using the Pepti-LAV[®] 1-2 test (Sanofi Diagnostics Pasteur, Paris, France).

Statistical techniques used in the analysis of the data included Yates's corrected $2 \times 2 \chi^2$ test, Fisher's exact test and the Student's *t*-test. Variables crudely associated with a risk of HIV infection ($P < 0.25$) were included in a stepwise logistic regression analysis to identify independent risk factors for HIV infection.

RESULTS

Characteristics of FSWs

The study enrolled a total of 426 FSWs, 211 in Ouagadougou and 215 in Bobo-Dioulasso. The age of the FSWs ranged from 12 to 50 years (median: 27 years). Their country of birth included Ghana (53%), Burkina Faso (25%) and Togo (20%). FSWs were mostly uneducated (57%) and single (62%). Ninety-eight per cent of FSWs had heard of AIDS. However, only 80% of FSWs knew that AIDS could be sexually transmitted, 27% knew about blood-transmission and 1% knew about mother-to-child transmission. Regular use of condoms was reported by 344 FSWs (81%). More than half (52%) were using oral contraceptives for prevention of unwanted pregnancies. The median number of previous pregnancies was about 2 (range: 0–10). A large majority of FSWs (61%) thought that their work did not expose them to the risk of HIV infection. A large proportion of the FSWs were highly mobile: 272 FSWs (64%) reported that they had been living in Burkina Faso for less than 3 years. During the 12 months preceding the study, 32% of FSWs had travelled out of Burkina Faso. In response to the question 'what is your job?', 237 (56%) answered that they were bar hostesses whereas, 189 (44%) declared that they were sex workers. The 189 female commercial sex workers had practised prostitution for a mean of 2 years (SD: 2 years, range 0–13 years). The number of clients per week varied from 1 to 70. According to the FSWs, their last client had used a condom in 72% of cases. The existence of regular clients who never used condoms was admitted by 70% of the FSWs. The price for one act of sexual intercourse differed

Table 1. Prevalence of genital tract infections by HIV status among female sex workers, Burkina Faso, 1994

	All female sex workers (n=426) %	HIV-positive (n=248) %	HIV-negative (n=178) %	P
Trichomoniasis	22.8	22.6	23.0	0.91
Bacterial vaginosis	50.5	53.2	46.6	0.18
Vaginal candidiasis	3.3	3.2	3.4	0.93
Gonorrhoea	13.4	16.1	9.6	<0.05
Chlamydial infection	4.5	3.6	5.6	0.33
Genital ulcer	9.4	11.3	6.7	0.11
Syphilis	15.0	19.0	9.6	0.01
Genital warts	4.2	6.0	1.7	0.03
Any sexually transmitted disease*	52.6	58.5	44.4	<0.01
Any genital tract infection [†]	77.2	81.9	70.8	0.01

*All sexually transmitted diseases without candidiasis and bacterial vaginosis

[†]Any genital tract infection=any sexually transmitted diseases or vaginal candidiasis or bacterial vaginosis

between sex workers: 86% asked for 300 to 500 F CFA (0.60–1.00 US\$), 13% asked for 1.000 F CFA (2 US\$), and only 1% demanded 2.000 F CFA (4 US\$).

Table 2. Univariate associations of demographic and sexual activity variables with HIV status among female sex workers, Burkina Faso, 1994

Characteristics	n=426	HIV+		P
		%	PR* (95% CI)**	
Age (years)				
<20	22	36.4	1.00	
20–29	234	52.1	1.43 (0.81–2.53)	0.23
30–39	133	67.7	1.86 (1.06–3.27)	<0.01
≥40	37	75.7	2.08 (1.16–3.73)	<0.01
No. of pregnancies				
0	56	41.1	1.00	
1	124	54.0	1.36 (0.92–1.87)	0.15
2–4	206	61.2	1.49 (1.07–2.08)	0.01
≥5	40	80.0	1.95 (1.37–2.76)	<0.001
School education				
Yes	185	54.6	0.90 (0.76–1.06)	0.18
No	241	61.0	1.00	
Immigrant				
Yes	322	60.6	1.19 (0.97–1.46)	0.08
No	104	51.0	1.00	
Occupation				
Sex workers	189	62.4	1.14 (0.97–1.34)	0.14
Bar hostesses	237	54.9	1.00	
Oral contraceptives				
Yes	222	61.7	1.13 (0.96–1.33)	0.13
No	204	54.4	1.00	
Reported condom use				
Yes	344	56.7	0.88 (0.73–1.06)	0.19
No	82	64.6	1.00	
Personal risk perception				
Yes	167	51.5	1.00	
No	259	62.5	1.22 (1.02–1.45)	0.02

*Prevalence ratio; **95% confidence interval

Prevalence of HIV infection and other STDs

The overall HIV seroprevalence rate amongst FSWs was 58.2% (95% confidence interval (CI): 53.4–62.9). There was no major difference in HIV prevalence between women who claimed to be sex workers (62%) and women who claimed to be bar hostesses (55%) ($P=0.12$). Amongst HIV-infected women, 173 (70%) were HIV-1 seropositive, 5 (2%) were HIV-2 seropositive, and 68 (28%) reacted to both HIV-1 and HIV-2 tests. The prevalence of STDs was high, 52.6% were infected with at least one STD agent (Table 1). With the exception of chlamydia infection, trichomoniasis and vaginal candidiasis, the prevalence of genital tract infections was higher overall among HIV-positive FSWs than among HIV-negative FSWs. However, only gonorrhoea ($P<0.05$), syphilis ($P=0.01$) and genital warts ($P=0.03$) were significantly higher amongst HIV-positive FSWs.

Factors associated with HIV infection

Table 2 presents univariate associations of demographic and behavioural variables with HIV status of FSWs. In this univariate analysis, HIV infection was associated with age ≥ 30 years, number of pregnancies ≥ 2 , and no personal HIV risk perception. In a logistic regression model which included other STDs, HIV infection remained independently associated with the number of pregnancies ≥ 2 , and no personal HIV risk perception (Table 3). Only the presence of syphilis and genital warts were significantly and independently associated with HIV seropositivity.

DISCUSSION

In common with other studies we found a high seroprevalence of HIV infection among FSWs in Burkina Faso (58%). In addition our study showed a very high level of other STDs (53%). This high figure may reflect some selection bias. Since the

Table 3. Factors associated with HIV infection in female sex workers in a logistic regression analysis, Burkina Faso, 1994

Characteristics	Adjusted odds ratio	95% confidence interval	P
Syphilis during this study	2.4	1.28–4.36	<0.01
Genital warts during this study	4.6	1.29–16.88	0.02
Number of pregnancies			
0	1.0		
1	1.7	0.89–3.34	0.10
2–4	2.4	1.29–4.47	<0.01
≥5	5.9	2.24–15.34	<0.001
No personal HIV risk perception	1.6	1.08–2.44	0.02

sample consisted of volunteers who knew that they were to be tested and treated for STDs, women who knew or thought that they may have had a problem may have been more likely to present themselves. However, STD rates are not unlike those found in other similar populations in Africa^{2,4,5,12}. For the purposes of serosurveillance, this potential bias is probably not important, provided that subsequent surveys are carried out using exactly the same methodology¹¹.

We found high rates of STDs in FSWs. These infections are curable with simple treatments using generic drugs. STDs not only facilitate the transmission of HIV infection but they also increase the susceptibility to HIV infection of carriers^{13,14}. In the absence of curative and preventive interventions, the high prevalence of HIV infection and of other STDs offers an enormous potential for the spread of the HIV epidemic in FSWs, their clients and in the contacts of the clients.

We showed that HIV infection in FSWs was associated independently and significantly with having had at least 2 pregnancies. In a cross-sectional study, it is difficult to draw conclusions about causality; given that there is unlikely to be a direct link between number of pregnancies and serostatus, the number of pregnancies is probably acting as an indicator of the number of sexual contacts and of the length of time exposed to infection.

Lack of knowledge about HIV transmission may, however, be a direct cause of increased risk of infection. Some FSWs appear genuinely to have no knowledge of HIV and AIDS and to take no precautions to protect themselves. Alternatively some FSWs may find it easier to carry out their work by deliberately ignoring or repressing unpleasant information. Though the majority of FSWs knew something about AIDS causes and prevention, the position remains far from satisfactory. FSWs urgently require more information and more support to enable them to employ the tools which would allow them to protect themselves and their clients¹⁵. Though the information provided about number of sexual contacts proved unsatisfactory in

this study, we hypothesize that there may be a group of FSWs at particularly high risk through lack of information, through having a large number of sexual contacts and whose clients rarely use condoms.

In conclusion, the present study demonstrated that in Burkina Faso, FSWs had high rates of STDs and HIV infection. Lack of knowledge about HIV and lack of effective measures for STD detection and control are major problems for this population. Two interventions could reduce the spread of the epidemic in FSWs and to their clients. First AIDS education and support for adopting safer practices is urgently required. Secondly, the screening and management of STDs among FSWs would contribute to the slowing of the epidemic and could be achieved through the existing health delivery system. Efforts are needed to reduce the costs of STD screening tests to FSWs, a major barrier to care seeking at present^{16,17} and to make generic drugs readily available for their treatment.

Acknowledgements: We would like to thank Drs Souleymane Zan and Célestin Ouedraogo as well as the team of all the laboratory technicians and midwives. Without their help this study could not have been performed. Special thanks as well to Arlette Simonon (Centre MURAZ/OCCGE, Bobo-Dioulasso, Burkina Faso) for their comments on the manuscript.

Financial Support for this study was provided by the Ministry of Health, Burkina Faso, with valuable assistance of consultants from the World Bank. Nicolas Meda's participation in this work was supported by a grant from ORSTROM.

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(Accepted 22 September 1997)