

Report on

HIV/AIDS SECOND GENERATION SURVEILLANCE:

Behavioral Surveillance Survey (BSS)

Among Female Sex Workers

COUNTRY: JAMAICA, 2005

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TABLE OF CONTENTS

	PAGE NO.
1.0 INTRODUCTION	4
– Objectives	5
– Definition of terms	6
2.0 CONCLUSIONS	7
3.0 METHODOLOGY	10
4.0 DETAILED FINDINGS	15
4.1 Background characteristics	15
4.2 HIV/AIDS knowledge and attitudes	16
4.3 FSW protective behaviour	17
4.4 FSW Risk behaviour	18
4.5 Risk factors for HIV infection among FSWs	19
 APPENDICES	
- BSS Instrument	
- Detailed table showing FSW HIV/AIDS knowledge and attitudes	

INDEX TO TABLES

Table 1	Background characteristics
Table 2	HIV/AIDS knowledge and attitudes
Table 3	FSW protective behaviour
Table 4	FSW risk behaviour
Table 5	Risk factors for HIV infection

1.0 Introduction:

“The diversity of HIV epidemics around the world is becoming ever more apparent. Existing HIV surveillance systems are ill-equipped to capture this diversity or to explain changes over time in mature epidemics. Efforts are now being made to build on existing systems, strengthening their explanatory power and making better use of the information they generate.”¹

These strengthened systems are called second generation surveillance systems. They aim to concentrate resources where they will yield information which will be most useful in controlling the epidemic and providing care for those infected.

Second generation surveillance involves the integration of biological surveillance and behavioral surveillance where the latter is used to inform results obtained in the former. Sex workers for instance represent a key behaviour in the infected population. In fact in June 2002, 21% of reported AIDS cases had engaged in sex with prostitutes. Intercourse with commercial sex workers thus represents a key risk behavior in the infected population.

This report represents the findings of a Second Generation Surveillance Survey conducted among female commercial sex workers (FSWs) in Jamaica. The Jamaican Ministry of Health (MOH) was responsible for the biological component, and Hope Enterprises Ltd. responsible for the behavioral component. The study was limited to female sex workers as it is assumed that male commercial sex workers offer their services primarily to other men and thus would be classified under the high risk sub-population “Men Having Sex with Men” (MWM).

This study was funded jointly by the MOH/Global Fund and the Pan American Health Organization (PAHO).

¹ WHO; 2000; *Second Generation Surveillance for HIV: the Next Decade*; p.p1

- **Objectives:**

The project focused on measuring specific behavioral and socio-demographic indicators as detailed below:

- Knowledge of HIV prevention methods
- No incorrect beliefs about AIDS transmission
- Condom use at last sex with client
- Consistent condom use with clients in the last month
- FSWs who never use condoms with paying clients
- Sex with non-paying partner
- Condom use at last sex with non-paying partner
- Substance use including injecting drugs
- Sex workers seeking voluntary HIV test
- Exposure to interventions
- FSW suffering STI symptoms in past year
- FSW seeking treatment for STIs from an approved clinic
- Accepting attitudes towards those living with HIV
- Parish & town of residence vs area interviewed in
- Incidence of sex with visitor/tourist
- Condom use at last sex with visitor/tourist

- **Definition of terms:**

For the purpose of the study female sex workers were defined: as females who engage in commercial sex, that is those who sell sex for cash.

Generally FSWs can be divided into 3 distinct groups. These are:

- Sex workers at fixed worksites
- Floating sex workers
- Hidden sex workers

Sex workers at fixed worksites:

These are defined as sex workers who are associated with their work place in a fixed manner. This would include those who work from fixed establishments such as brothels and massage parlors.

Floating sex workers

Floating sex workers refers to female sex workers who do not work in any one location but are highly mobile and tend to change location frequently. These include street FSWs.

Hidden FSWs

Hidden sex workers refers to persons working as bartenders or waitresses in bars or restaurants who also engage in commercial sex.

2.0 CONCLUSIONS :

Overall approximately 9% of FSWs were found to be HIV positive. This however may be understated as the street prostitutes, many of whom were crack/cocaine users, or were controlled by pimps would not participate in the study. This was particularly so in Ocho Rios and Montego Bay. As a result it would be more instructive to note that it was 18% of these floating or street prostitutes who tested positive as against 5% of those who were operating from fixed sites such as clubs.

– Behavioral and socio-demographics indicators measured

INDICATORS	HIV Positive FSWs %	HIV Negative FSWs %
▪ Knowledge of HIV prevention methods		
– Unprompted	17.9	31.7
– Prompted	97.4	97.8
▪ No incorrect beliefs about AIDS transmission	7.7	19.7
▪ Condom use at last sex with Jamaican/local client	84.6	93.2
▪ Incidence of sex with visitor/tourist	30.8	63.3
▪ Condom use at last sex with visitor/tourist	66.7	91.2
▪ Consistent condom use with clients in the last month	69.2	84.9
▪ FSWs with condom use experience with paying clients	100.0	99.3
▪ Sex with non-paying partner	30.7	60.1
▪ Condom use at last sex with non-paying partner	25.0	53.0
▪ Sex workers ever injecting drugs	0.0	3.9
▪ Sex workers seeking voluntary HIV test	36.0	59.6
▪ Exposure to interventions	25.6	62.3
▪ FSW suffering STI symptoms in past year	12.8	21.7
▪ FSW seeking treatment for STIs from an approved clinic	60.0	93.2
▪ Accepting attitudes towards those living with HIV	30.8	37.0
▪ Parish & town of residence differs from area interviewed in	43.6	51.0

The results of logistic regression showed that crack/ cocaine usage, condom use at last sex with a Jamaican paying client, participation in intervention, FSW classification (street vs fixed site) and economic well-being² were significantly associated with HIV infection.

Generally, HIV-positive FSWs were found to be older, have fewer years of education, earn significantly less money per client and more likely to be street based than those testing negative for HIV. Additionally, the HIV-positive FSW reported significantly more regular paying partners in the last 7 days and significantly less condom use at last sex particularly with local (Jamaican) clients. They were also twice as likely to report no condom use at last sex with a non-paying partner. The HIV-positive group was less likely to report condom use at last sex as well as less likely to report consistent condoms use whether it be with paying clients, non-paying clients or generally within the last 30days.

Additionally appropriate knowledge including rejection of myths was significantly lower among those FSWs who tested positive for HIV. They were also significantly less likely to have been exposed to HIV/AIDS interventions.

The HIV-positive group of FSWs emerged as a particularly high risk group. Beyond having more partners and practicing less protective behaviour as well as being less knowledgeable and less involved in interventions, they were also significantly more likely to be users of narcotics such as crack/cocaine and ‘seasoned spliff’.

The HIV status of these FSWs, their relative lack of protective behaviour and their higher number of multiple partnerships/clients makes them a particularly worrying group. These individuals are carriers of the disease and exhibit behaviour patterns that will contribute to the exponential spread of HIV in Jamaica. Additionally, their use of crack/cocaine and seasoned spliff further increases their likelihood of engaging in risky sex thus remaining an important means of transmission in the island.

² income earned from last client used as proxy variable for economic well-being

Considering that the infected group is more likely to be street based, a way needs to be found to undertake systematic intervention among these sex workers just as is being done in some fixed sites. Specifically, this floating group proved very difficult to access during the data collection phase of the survey as many were either hostile crack users who were suspicious of strangers or FSWs who were controlled by pimps. They therefore ended up being underrepresented in the survey but clearly showing an infection rate 3 times that of FSWs in fixed sites. FSWs operating from fixed sites were relatively easy to access as both the Jamaica Aids Support (JAS) and the Ministry of Health (MOH) conduct regular visits and interventions among this group. They in turn were more accommodating, knowledgeable and uninfected. A way must urgently be found to gain entry to and systematically intervene with these floating sex workers, who emerged as the more imminent danger of the two cohorts.

3.0 Methodology:

The research took the form of a cross-sectional survey among the target groups. The survey covered the parishes of KSA & St. Catherine, St. James, Westmoreland and St. Ann which accounted for 80% of all reported AIDS cases up to December 2002. Fieldwork focused on the high risk areas of the Kingston Metropolitan Area (KMA) including Portmore, Montego Bay, Ocho Rios and Negril. A total of 450 FSWs were eventually completed from a target of 500.

A basic two-stage sample design was employed. Step 1 entailed a rapid assessment of the sub-population which led to the construction of an appropriate sampling frame. Step 2 was the random selection of sites from the sample frame for each area. Respondents were then selected at the sites based on their willingness to participate. At the sites a convenience sampling technique was used to recruit persons into the study. Snowball sampling was also used in order to facilitate the inclusion of hidden FSWs.

Constructing the sampling frame:

The rapid assessment of the sub-population included a social mapping of locations/sites where sufficient numbers of the target group could be found on a regular basis. These identified and mapped sites were used as primary sampling units in order to compile a comprehensive sampling frame.

Assistance was sought from key informants in the rapid assessment and consequent social mapping phase of the project. Collaboration with these key informants allowed access to the subpopulation. Key informants included:

- the privately contracted outreach officers of Jamaica AIDS Support currently working with the target
- FSWs themselves
- MOH contact investigators who work with/are familiar with the target

✓ ***Fixed Sex Workers:***

Fixed sex workers were sampled using a two-staged convenience sample approach. A listing of commercial sex establishments in the locations being surveyed and the estimated number of FSWs associated with each was compiled. This listing provided a sampling frame for fixed FSWs. From this sampling frame primary sampling units were randomly chosen. Hidden sex workers were also captured in these fixed sites.

✓ ***Floating FSWs:***

Floating FSWs were sampled using a time-location cluster method. A mapping exercise was conducted using key informants. The time-location sampling involved the construction of a sample frame which identified times when members of the target population gather at specific locations. These venue-day-time segments then became the primary sampling units.

▪ **Data Collection:**

Data was collected using a structured questionnaire designed to cover the relevant issues. Specifically, the questionnaire was a modification of the core instrument as contained in the FHI BSS manual, modified in collaboration with the Ministry of Health Epidemiology unit. Data was collected using trained interviewers accompanied by the MOH's medical personnel who were responsible for collection of biological samples.

Data was collected late nights and early mornings while the FSWs were at their work sites. Interviewers operated in teams and were accompanied in the field by a Field Supervisor to facilitate on the spot problem solving as well as the MOH's phlebotomists to perform the blood-letting.

- **Gaining access:**

Access was gained to the sites and the respondents through the privately contracted outreach officers of Jamaica AIDS Support and the Ministry of Health's Contact Investigators and Behaviour Change officers who currently conduct interventions among the FSWS.

- **Inclusion criteria:**

Only females engaged in sex work who were willing to participate in both the behavioral survey as well as the biological testing were included in the study.

- **Agreed Blood-letting Testing procedures:**

Biological testing including HIV testing procedures were the responsibility of the MOH. The protocol for this segment of the study was developed by the MOH and approved by the MOH Ethical Review Committee.

- **Human Subject Concerns:**

Female sex workers involved in this study were asked questions about their sexual knowledge, attitudes and behaviors as well as sex worker practices. Blood was also collected from each for testing. Confidentiality of information was therefore of fundamental importance as well as anonymity of respondent particularly as it relates to results of their HIV test. In order to protect the confidentiality and anonymity of respondents the following measures were used:

- Respondents were first approach by the interviewer who introduced the study including its purpose and confidential, anonymous and voluntary nature. On consenting to participate the lab technician was then introduced. The phlebotomist, in the absence of the interviewer and others at the site, then explained the blood letting procedure including the implications of a positive

result and a negative result. If the respondent consented then blood was drawn and the respondent was then sent back to the interviewer to complete the behavioral survey.

- To maintain the anonymity of the respondent no names were recorded on the questionnaires and each respondent was assigned a unique respondent number by the interviewer. Phlebotomists of necessity had to record names, addresses and telephone numbers since these would be needed to advise respondents of their status but these were not shared with interviewers or Hope Enterprises Ltd.
- The interviewers used received strict instructions about the importance of maintaining confidentiality.
- Questionnaires were linked to blood results by these unique codes as well as respondent age and date of birth.
- All instruments for this study were reviewed and approved by the Ministry of Health's Ethical Review Committee.
- All test results are now kept in a locked cabinet at Hope Enterprises Ltd.

▪ **Limitations**

Limitations of the study included the following:

- ✓ Many female sex workers operating on the streets were particularly difficult to access as they were either protected or controlled by pimps who allowed access only those purchasing services access. This was particularly so in Ocho Rios and Montego Bay.

- ✓ FSWs on crack and located in known crack ‘dens’ were often suspicious of strangers and therefore needed repeat visits as well as more intense rapport building to try and get their participation. This led to a very protracted data collection exercise and in many cases even after repeat visits, only very few could be persuaded to participate. Quotas for these sites often fell very short of projections especially in Montego Bay and Ocho Rios.

- ✓ Massage parlors and their employees were generally unwilling to admit to prostitution and consequently only one parlor allowed their workers to participate.

4.0 DETAILED FINDINGS:

4.1 Background Characteristics (see Table 1):

Demographics:

A total of 450 female sex workers (FSWs) were interviewed in the urban locations of Kingston Metropolitan Area including Portmore, Ocho Rios, Montego Bay and Negril. Overall approximately 9% of these FSWs were found to be HIV positive. Given the mobile nature of FSWs, it is important to note that 18% of floating or street FSWs tested positive for HIV compared to 5% of fixed or club based FSW.

Additionally while most of the FSWs in the KMA, regardless of HIV status, lived and operated in the KMA, more than a half of those operating in Ocho Rios lived outside the parish of St. Ann. Similarly 6-7 of every ten FSWs operating in St. James lived outside the parish while a half of those testing negative in Negril resided outside the parish. Only one (1) FSW tested positive in Negril and she resided in the parish.

HIV positive FSWs tended to be older, have and have less years of education than the HIV negative respondents. The HIV-positive had a mean age of 32 years and had a mean of 9 years schooling compared to the HIV negative FSWs who had a mean age of 26 years and had 10 years of schooling. Both groups had first received money when they were approximately 18-19 years old.

Partner Status & Dependents:

Generally both groups tended to describe their current partner status as being single (49% HIV-positive; 36% HIV-negative) or having a partner who they see occasionally (23% HIV-positive; 29% HIV-negative). HIV-negative FSWs (2%) were slightly more likely to report being married or living with a partner than their HIV-positive (18%) counterparts.

The HIV-positive respondent had an average of 2.8 dependents while the HIV-negative respondent reported an average of 2.4 dependents. Both groups did however report an average of two (2) children under 15 years.

Sexual Partner History:

While both groups reported having an average of 3-4 partners in the last seven (7) days those testing HIV-positive reported twice as many regular paying partners than those who tested HIV-negative. Specifically while HIV-positive FSWs reported an average of 3.7 regular paying partners in the last seven days, the HIV-negative cohort reported approximately a half that amount or an average of 1.9 regular paying clients ($p < 0.000$). While most HIV-positive FSWs remained in a single parish, a few demonstrated greater mobility. Specifically, five (5) operated in two (2) parishes and one (1) operated in seven parishes.

4.2 HIV/AIDS knowledge and attitudes (see Table 2):

When prompted, the vast majority of FSWs acknowledged 'use a condom all the time' as a method of HIV prevention (97.8%). However when asked what steps a person can take to protect themselves the HIV-negative FSWs were more likely to spontaneously report all the time condom use than their HIV-positive counterparts (compare 17.9% HIV-positive vs 31.7% HIV-negative).

While approximately a fifth (19.7%) of HIV-negative FSWs appropriately recognized myths, less than a tenth (7.7%) of those with the disease had a similar knowledge level. Overall those testing negative for HIV tended to have greater appropriate knowledge of the transmission of HIV/AIDS (mean knowledge score = 4.3) than those testing positive for the virus (mean knowledge score = 3.7) ($p = 0.006$).

Overall less than a third (30.8%) of HIV-POSITIVE FSWs showed accepting attitudes towards PLWAs compared to 37% of those who tested negative for the disease.

4.3 Protective Behaviour (*see Table 3*):

Despite being a high risk group due to their occupation as well as HIV status, FSWs who tested positive for HIV were found to generally report practicing less protective behaviour than their HIV negative counterparts.

Condom Usage:

Specifically, the HIV- positive group tended to report lower condom usage at last sex with tourist client, the Jamaican client as well as their non-paying partner. Importantly while the HIV- positive FSWs reported a higher average number of partners in the last 7 days they were significantly less likely to report having used a condom at last sex with the Jamaican/local client. Additionally only a quarter (25%) of HIV- positive FSWs who report sex with a non-paying partner had used a condom at last intercourse, compared to twice as many (53%) of those testing negative who reported last time condom use with a non-paying partner.

This evident lack of protective behaviour was further emphasized in their being less likely to report consistent condom use with: paying clients (77% HIV-positive; 87% HIV-negative); non-paying clients (16% HIV-positive; 40% HIV-negative) and generally in the last thirty (30) days (69% HIV-positive; 85% HIV-negative).

Condom Availability and Access:

More HIV-positive FSWS (24%) reported having no condoms on hand than FSWs who tested negative (19%). Despite differing usage patterns, both groups who had reported having an average of 4 condoms on hand at the time of interview as well as being able to access a condom within 5 minutes (95% HIV-positive; 98% HIV-negative).

HIV-positive FSWs were also slightly less likely to locate in sites where condoms were available (87% HIV-positive; 94% HIV-negative).

HIV Testing History:

While 6 in 10 HIV-positive FSWs reported having had an HIV test previously significantly more HIV-negative FSWs (8 in 10) reported previous testing whether voluntary or required. The HIV-positive FSWs lack of protective behaviour practice is underscored by the fact that just over a third (36%) had undergone voluntary testing compared to 60% of HIV-negative FSWs who reported having undergone voluntary testing. Approximately 4 in 10 persons in both groups who had undergone voluntary testing had done so within the past year.

Participation in HIV/AIDS Intervention programmes:

Approximately a quarter (25%) of the HIV-positive FSWs reported being exposed to HIV/AIDS interventions, compared to 62% of those testing negative. Overall while, few FSWs interviewed (12%) reported having been involved in the MOH programme, most expressed an interest to be a part of such programme (87%). It should be noted however that those testing positive were less likely to express interest (79%) than those who tested negative (87%).

4.4 Risk Behaviour (see Table 4):

Sex with Tourist:

Interestingly HIV-negative FSWS were 2 times more likely to report having clients who were tourists (31% HIV-positive; HIV –negative 63%), as well as six times more likely to report having a tourist client in the last 7 days (5% HIV-positive; 38% HIV-negative).

Substance Use:

Overall HIV-positive FSWS were more likely to report usage of illicit drugs including marijuana (ganja), crack/cocaine; seasoned spliff and cigarettes. In fact those testing positive were 10 times more likely, than those testing negative, to report crack/ cocaine usage as well almost as 3 times more likely to report the use of seasoned spliff. Additionally, while more than two-thirds (68%) of HIV-positive FSWS reported usage of marijuana, just over a half (55%) of those testing negative reported usage of same.

HIV negative FSWS were however more likely to report having ever injected drugs (0% HIV-positive; 4% HIV-negative) as well as daily usage of alcohol (44.7% HIV-positive; 57.4% HIV-negative).

Experience with STIs in last Year:

Just over a tenth (12.8%) of those testing positive reported having a genital ulcer in the last year compared to HIV negative FSWS who were twice as likely (21.7%) to report having such an ulcer. Interestingly while 6 out of 10 HIV-positive respondents and 9 out of 10 HIV-negative respondents reportedly sought treatment from a doctor or clinic/hospital; 4 in 10 of those testing positive reported having taken no action.

4.5 Block entry logistic regression to estimate the risk factors for HIV infection

(Table 5):

In the final stage of analysis, block entry logistic regression was used to develop a multivariate model to identify factors associated with HIV infection among FSWs in specific Jamaican locations.

The results of this analysis showed that crack/ cocaine usage, condom use at last sex with paying Jamaican client, participation in intervention, FSW classification and economic well-being³ were significantly associated with HIV infection. Specifically, FSWs who had used crack/cocaine were five (5) times more likely to be HIV positive. Floating FSWs or those based on the streets were twice as likely to be infected. Persons who had not participated in intervention were three (3) times more likely to test HIV positive. Female sex workers who reported no condom use at last sex with paying Jamaican client were five (5) times more likely to test positive. Additionally, FSWs earning more and therefore of higher economic well-being were less likely to test positive for HIV.

³ income earned from last client used as proxy variable for economic well-being

Table 1: Background Characteristics

	HIV Test Result		Total
	HIV Positive	HIV Negative	
Location of interview: KSA; % (n)	12.2 (139)	87.8 (139)	-
Location of interview: Ocho Rios; % (n)	12.4 (137)	87.6 (137)	-
Location of interview: Montego Bay; % (n)	4.7 (85)	95.3 (85)	-
Location of interview: Negril; % (n)	1.1 (89)	98.9 (89)	-
Total; % (n)	8.7 (450)	91.3 (450)	-
Age, mean years. (SD)	32.2** (9.5)	26.3 (7.1)	26.8 (7.6)
Education, mean years., (SD)	9.0 (4)	10.4 (3.6)	10.3 (3.7)
Number of dependents; mean, (SD)	2.77 (1.6)	2.41 (1.5)	2.4 (1.5)
Number of children <15yrs; mean, (SD)	1.8 (1.2)	1.9 (1.5)	1.9 (1.2)
Ag first received money for sex; mean, (SD)	19.4 (6.5)	18.7 (4.7)	18.7 (4.8)
Current partner status:			
-Married/living with partner; % (n)	17.9 (39)	21.9 (411)	21.6 (450)
-Have partner who stays overnight; % (n)	10.3 (39)	13.1 (411)	12.9 (450)
-Partner who see occasionally and have sex; % (n)	23.1 (39)	29.4 (411)	28.9 (450)
-Single/no partner at this time; % (n)	48.7 (39)	35.5 (411)	36.7 (450)
Total # sex partners in last 7 days, mean, (SD)	3.8 (3.6)	3.6 (2.6)	3.6 (2.7)
Total # tourist sex partners in last 7 days, mean, (SD)	1.5 (0.7) ⁴	1.7 (1.3)	1.6 (1.3)
Total # new sex partners in last 7 days, mean, (SD)	1.7 (0.8)	1.9 (1.6)	1.9 (1.5)
Total # regular paying partners in last 7 days, mean, (SD)	3.7* (4.3)	1.9 (1.6)	2.0 (2.0)
Total # non-paying partners in last 7 days, mean, (SD)	1.1 (0.3) ⁵	1.0 (0.2)	1.0 (0.2)
Had sex with non-paying partner, % (n)	30.7 (39)	60.1 (411)	56.0 (450)
Income from last paying partner; mean \$, (SD)	2,202.94 ** (1,998.7)	4,691.45 (5,472.9)	4,467.6 (5,301.8)
Resides out side of parish in which interviewed in:			
-Interviewed in KSA, resides in another parish	29.4 (17)	31.1 (122)	-
-Interviewed in Ocho Rios, resides in another parish	52.9 (17)	63.3 (120)	-
-Interviewed in Montego Bay, resides in another parish	75.0 (4)	63.0 (81)	-
-Interviewed in Negril, resides in another parish	0.0 (1)	51.2 (88)	-

* p<0.05; ** p<0.000

⁴ Base=Two (2) HIV positive FSWs

⁵ Base=Nine (9) HIV positive FSWs

Table 2: FSW HIV/AIDS Knowledge and Attitudes

	HIV Test Result		Total
	HIV Positive	HIV Negative	
Knowledge of HIV prevention method (condom):			
-Use a condom all the time (unprompted); % (n)	17.9 (39)	31.7 (411)	30.5 (450)
-Use a condom all the time (prompted); % (n)	97.4 (39)	97.8 (411)	97.8 (450)
No incorrect beliefs about HIV transmission (denying myths); % (n)	7.7* (39)	19.7 (411)	18.7 (450)
Knowledge score (highest possible score=6); mean (SD)	3.7* (1.3)	4.3 (1.2)	4.3 (1.2)
Accepting attitudes to PLWA ⁶ ; % (n)	30.8 (39)	37.0 (411)	36.4 (450)

* p<0.05

** p<0.000

⁶ Accepting attitudes to PLWA calculated as agreement (*Strongly agree and agree*) with statements "if a teacher has HIV she should be allowed to continue teaching in school" and "If I knew a shop keeper or food seller had HIV, I would definitely still buy food or vegetables from them".

Table 3: FSW Protective Behaviour

	HIV Test Result		Total
	HIV Positive	HIV Negative	
Condom use at last sex with:			
-Tourist client; %, (n)	66.7 (12)	91.2 (260)	90.1 (272)
-Jamaican/local client ;%, (n)	84.6** (33)	93.2 (384)	92.4 (417)
-Non-paying partner; %, (n)	25.0 (12)	53.0 (249)	51.7 (261)
Consistent condom use over last 30 days ⁷ ; % (n)	69.2 (39)	84.9 (411)	83.6 (450)
Consistent condom use with paying clients ⁸ ; % (n)	76.9 (39)	86.9 (411)	86.0 (450)
Consistent condom use with non-paying clients ⁹ over past year; % (n)	16.2 (12)	40.2 (249)	39.1 (261)
# condoms on hand ¹⁰ ; median (n)	4.0 (29)	4.0 (375)	4.0 (404)
FSWs with no condoms on hand ¹¹ ; % (n)	24.1 (29)	19.2 (375)	19.6 (404)
Condoms available on site; % (n)	87.2 (39)	93.4 (411)	92.9 (450)
Could access condoms in 5 mins.; % (n)	94.9 (39)	97.6 (411)	97.3 (450)
Ever had an HIV test (before today); % (n)	59.0* (39)	78.3 (411)	76.6 (450)
FSWs seeking voluntary HIV test; % (n)	36.0 (39)	59.6 (411)	57.6 (45)
HIV test done in past year; % (n)	43.5 (23)	40.8 (321)	41.0 (344)
Exposed to HIV/AIDS interventions; % (n);	25.6** (39)	62.3 (411)	59.1 (450)
Participated in MOH Programme; % (n)	5.1 (39)	12.9 (411)	12.2 (450)
Would like to be a part of MOH programme; % (n)	79.5 (39)	87.3 (411)	86.7 (450)

* p<0.05

** p<0.000

⁷ % FSWs reporting every time reported.⁸ % FSWs reporting every time use reported⁹ Base= FSWs reporting having non-paying partner¹⁰ Forty-six (46) persons did not respond¹¹ Forty-six (46) persons did not respond

Table 4: FSW Risk Behaviour

	HIV Test Result		Total
	HIV Positive	HIV Negative	
Ever had tourist client; % (n)	30.8 (39)	63.3 (411)	60.4 (450)
Had tourist client in last 7 days; % (n)	5.0 (39)	38.0 (411)	35.1 (411)
Drugs/ Substances used in lifetime: % (n)			
- Ganja	68.4 (38)	55.0 (411)	56.6 (449)
- Crack/cocaine	26.3** (38)	2.7 (411)	4.7 (449)
- Seasoned spliff	21.1* (38)	8.3 (411)	9.4 (449)
- Ecstasy	0.0 (38)	1.7 (411)	1.6 (449)
- Cigarettes	86.8 (38)	69.8 (411)	7.3 (449)
- Other	0.0 (38)	1.5 (411)	1.3 (449)
- None used	7.9 (38)	22.1 (411)	20.9 (449)
Ever tried injecting drugs; % (n)	0.0 (38)	3.9 (411)	3.6 (449)
Alcohol used everyday; % (n)	44.7 (38)	57.4 (411)	56.3 (449)
Never used condom in last 30days; % (n)	2.6 (39)	0.7 (411)	0.9 (450)
Never used condom with paying client; % (n)	0.0 (39)	0.7 (411)	0.7 (450)
Incidence of genital discharge; % (n)	46.2 (39)	37.5 (411)	38.2 (450)
Incidence of genital ulcer in last year; % (n)	12.8 (39)	21.7 (411)	20.9 (450)
Action taken for genital ulcer: % (n)			
-Went to hospital/clinic	60.0 (5)	73.0 (89)	72.3 (94)
-Went to private doctor	0.0 (5)	20.2 (89)	19.1 (94)
-Did nothing	40.0 (5)	2.2 (89)	4.3 (94)
-Other	0.0 (5)	6.8 (89)	6.4 (94)

* p<0.05

** p<0.000

Table 5: Multiple logistic regression estimates of the risk factors of HIV infection

Variable Categories	Odds Ratio			P value
	Estimate	95% CI		
Crack/ cocaine use	5.3	1.8	15.3	0.002
Participation in intervention	3.0	1.3	7.8	0.010
Street based/club based FSW	2.7	1.0	5.6	0.048
Economic well-being	1.0	1.000	1.001	0.020
Condom use last time with local paying client	5.7	1.6	21.0	0.009

Appendices

FSW Specific HIV/AIDS Knowledge and Attitudes

	HIV Test Result		Total
	HIV Positive	HIV Negative	
Avoid sharing food with a person who has AIDS (disagree); %, (n)	35.9** (39)	66.1 (410)	63.5 (449)
Staying with only one faithful uninfected partner (agree); %, (n)	74.4 (39)	73.4 (410)	73.5 (449)
Using condoms all the time (agree); %, (n)	97.4 (39)	97.8 (410)	97.8 (449)
Avoid touching a person who has AIDS (disagree); %, (n)	51.3* (39)	69.0 (410)	67.5 (449)
Avoid being bitten by mosquitoes (disagree); %, (n)	53.8 (39)	58.5 (410)	58.1 (449)
Abstaining completely from sex (agree); %, (n)	59.0 (39)	67.3 (410)	66.6 (449)

* p<0.05

** p<0.000