

**'REGULAR' PARTNERS OF FEMALE SEX WORKERS:
A Potential Bridging Population in the Kenyan HIV
epidemic**

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**'REGULAR' PARTNERS OF FEMALE SEX WORKERS:
A Potential Bridging Population in the Kenyan HIV epidemic**

A thesis submitted in partial fulfilment of the requirement for the degree of Master of Public Health

By

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ABSTRACT

Background: Prevention strategies aimed at reducing STI and HIV transmission have been successful at improving the acceptability of condoms within FSWs- client partnerships, yet they have been less successful within FSWs relationships with their steadier partners, also referred to as 'regular' partners (RPs). The phenomenon of poor acceptability of condom use is not unique to higher risk regular partnerships like FSWs-RPs, but is also found in lower risk regular partnerships, such as husbands-wives in the Kenyan general population. Studies from other settings indicate FSWs' RPs are known to have higher levels of HIV and other STIs, greater number of concurrent partners with whom they have unprotected sex with their RP suggests that FSWs' RPs may act as a bridge for HIV and other STIs into the general population.

Main Objectives and Methods: To describe sexual behaviour characteristics within and outside of FSW-RP relationships, a cross sectional study was conducted on FSWs and their RPs in Nairobi, Kenya. Once enrolled, FSWs and their RPs were surveyed using a behavioural questionnaire, and they provided biological samples to assess HIV-1, syphilis, *N. Gonorrhoea*, *C. trachomatis*, and *Herpes Simplex* type 2 levels. Condom use was reported on semi-quantitative scale: where 1=Never (0%), 2= Rarely (1-24%), 3=Sometimes (25-49%), 4=Often (50-74%), 5=Almost always (75-99%), 6=Always (100%).

Results: Thirty-four FSW-RP couples were enrolled in the study. FSW-RP relationships were long standing, with a mean duration of 6.6 years. Self perception of HIV risk infection was low among the majority of RPs. Twenty-three RPs reported concurrent partners (23/ 34; 68%), and they reported a mean of 5.5 women (range; 2-21). The majority of FSW-RP couples never used condoms, significantly associated with perceived level of trust within the relationship (**FSWs $p=0.00018$; RPs= 0.022**). Both FSW and RP reports a gradient of condom use related to perceived intimacy level of partners. Active FSWs reported lower condom use with RPs than with casual clients or regular clients (**2.8 vs 6.0 and 2.8 vs. 5.3; $p<0.001$**). A similar pattern is reported by RPs' never use of condoms, with never use the highest among wives, followed by FSW partners, regular girlfriends, other FSW partners, and lastly, by occasional partners (**$p=0.000$**). With the exception of HSV-2, were 94.1% (32/34) FSWs and 61.8% (21/34) RPs were infected, conventional STIs were rare. Prevalence of HIV-1 in FSWs was 35 % (12/34) and in RPs was 27% (9/34). In total, 13 FSW-RP couples are living with HIV/AIDS, 8 are concordant and 5 are discordant. Compared to RPs' whose FSW partner was HIV negative, RPs were 42 times more likely to be HIV positive if their FSW partner was also HIV positive (**$p=0.00009$**).

Conclusion and Recommendations: Based on this study's findings of high background HIV prevalence rates in both FSWs and their RPs, as well as RPs reported low levels of condom use with their concurrent partners, it is quite plausible that RPs are a potential bridging population in Kenya's HIV epidemic. As such, the Kenya's existing one size fits all policy of abstinence, be faithful and condomize with casual partners, may do little to improve condom use within regular partnerships. Before developing a new prevention response, further research needs to be done on the relationship between perceived trust and intimacy levels on condom use within regular partnerships, in order to identify new prevention strategies which take into account the realities of more intimate relationships found both within higher risk FSW-RP and lower risk husband-wife relationships.

Key words: female sex worker, HIV, regular partners, condom use, concurrency, bridge population, Kenya

LIST OF ABBREVIATIONS

ABC	Abstinence, Be faithful, use Condoms
AIDS	Acquired Immune-Deficiency Syndrome
ANC	Antenatal clinic
ART	Antiretroviral Treatment
ARV	Antiretroviral drug
BCC	Behaviour Change Communication
CC	Casual Client
CCU	Consistent Condom Use
CHS	Casual Heterosexual Sex
DALY	Disability Adjusted Life Years
DHS	Demographic and Health Survey
FGD	Focused Group Discussion
FSW	Female Sex Worker
GDP	Gross Domestic Product
HDI	Human Development Index
HIV-1	Human immunodeficiency virus type 1
HSV-2	Herpes simplex virus type-2
IDU	Injecting Drug User
IEC	Information, Education, Communication
KAIS	Kenya AIDS Indicator Survey
KDHS	Kenya Demographic and Health Survey
KNASP	Kenya National AIDS Strategic Plan
MCH	Mother to Child Health
MoH	Ministry of Health
MSM	Men having Sex with Men
NACC	National AIDS Control Council
NASCOP	National AIDS and STI Control Programme
NGOs	Non Governmental Organizations
PLWHA	People Living With HIV/AIDS
PMTCT	Prevention from Mother to Child Transmission
PPP	Parity Purchasing Power
RC	Regular Client
R & D	Research and Development
RP	Regular Partner
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection
THE	Total Health Expenditure
UNAIDS	The Joint United Nations Program on HIV/AIDS
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

PREFACE

AUTHOR'S BACKGROUND

The author designed and conducted a cross sectional study on regular partners of female sex workers (FSWs) while she was an undergraduate at the University of Toronto. Prior to working as the project coordinator for this study in June of 2005 and February of 2006, the author worked in a variety of settings as a research assistant in order to hone her critical analysis skills. Her work included assessing behavioural surveillance systems surveys for at risk populations in India, developing new instruments to capture information from hard to reach groups, such as sex workers, their clients, and their regular partners. The author's capability to analyze health issues in an African context was further developed during her undergraduate degree by resident research projects in Windhoek, Namibia and Nairobi, Kenya.

AUTHOR'S MOTIVATION

This thesis topic first piqued the author's interest when she heard from principal investigators at the Majengo Research cohort in Nairobi, Kenya, that FSWs behaved differently with occasional or casual paying clients than with those they perceived as regular partners (RPs), whether or not those partners paid them. With casual clients, FSWs reported consistent condom use, which was associated with significant reduction of STIs including HIV. With their RPs, however, they reported very low levels of condom use. Researchers theorized that these differences in behaviour between casual clients and RPs may account for new cases of HIV and STIs among otherwise condom compliant FSWs. Furthermore, this difference in behaviour had several implications which have yet to be tested. Of particular interest was whether RPs exposed FSWs to HIV and other STIs, or vice versa; and whether these RPs had other concurrent partners whom they had unprotected sex, and consequently exposed their concurrent partners to STIs; and, whether RPs because of their sexual risk taking behaviour and STI prevalence, were a bridging population for HIV and other STIs into the general population. Investigating the roles of FSWs' RPs in the HIV epidemic became the impetus for this thesis.

OVERALL THESIS DESCRIPTION

This thesis has been organized into 6 chapters. **Chapter 1** describes Kenya and its HIV profile. **Chapter 2** introduces an obstacle for Kenyan HIV prevention and control in female sex workers' regular partners and provides the thesis' research questions, objectives, hypotheses, and methodology overview. The literature review in **Chapter 3** explores the contextual background of the current HIV epidemic and the role regular partners are believed to play, including working definitions, description of the factors influencing the role regular partners in the current HIV epidemic, and a summary of the key challenges in designing studies and interventions for regular partners of female sex workers. **Chapter 4** describes the thesis' cross-sectional study design, sampling strategy, data collection processes and analyses, and outlines the study's limitations. **Chapter 5** presents the research findings, including the lessons learned in recruiting this hard-to-reach population, and discusses the study results within the context of the current literature. **Chapter 6** conveys the thesis conclusion and final recommendations.

CHAPTER 1: KENYA COUNTRY AND HIV PROFILE

Chapter 1 situates the discussion of HIV/AIDS prevention in Kenya with a brief country and HIV/AIDS profile, followed by a summary of current prevention responses to the epidemic.

KENYA COUNTRY PROFILE

GEOGRAPHY

Located in East Africa, Kenya is a medium sized country of 571, 466 km². It is bordered by 5 other countries: Somalia, Ethiopia, Sudan, Uganda, and Tanzania, with the final border at the Indian Ocean (1) (Please refer to Annex 1.1 Kenya map). Kenya is divided into 8 provinces: Central, Coast, Eastern, North Eastern, Nyanza, Rift Valley, Western, and Nairobi. The province of Nairobi also holds Kenya's capital city, which is also named Nairobi (1).

POLITICAL ADMINISTRATION

Kenya gained independence from Britain in 1963, and has a democratic government (1) Its current president is Mwai Kibaki, and the opposition party is led by Raila Odinga (2).

DEMOGRAPHY

Kenya's population is currently 38.3 million (3), with a projected growth rate of 2.6 percent per annum for the period of 2005-2010. It has a youthful composition, with 43 percent of its citizens under the age of 15 (3). Of its 42 ethnicities, the 3 main ones are Kikuyu, Luyha, and Luo (4). Its predominant religions are Christianity, and Islam (1) The majority of Kenya's people live in rural areas (5). The country has two official languages: English and Swahili (1). (Table 1.1)

Table 1.1 Basic Demographic Indicators

	N	%	Year	Source
Total Population	38,277,856		2008	(3)
Adult 15-49	19,062,372	50	2008	(3)
Under 15	16,612, 589	43	2008	(3)
Over 65 +	382,778	1.2	2008	(3)
Population Growth rate		2.6	2005-2010	(6)
Total Fertility Rate per woman (Age 15-49 yr)	5		2004	(7)
Urban – Rural		(21, 79)	Year not specified	(5)

ECONOMY, DEVELOPMENT, AND HEALTH STATUS

Based upon its GDP per capita, Kenya is considered a low income country, ranking 144th out of 177 countries on the human development index (HDI) (8). The industries that contribute the most to Kenya's GDP are agriculture and forestry, manufacturing, and services (2). The adult literacy rate is 73.6 percent (8). Life expectancy at birth is 52.7 years old (8). Kenya's infant mortality rate (IMR) and under 5 mortality rate per 1,000 live births are 79 and 120, respectively (8). Its maternal mortality ratio is 560 per 100,000 live births (8). Irrespective of age, the leading cause of mortality is HIV/AIDS, which accounts for 38 percent of all deaths. HIV/AIDS accounts for 40 percent of the country's burden of disease, as measured by disability adjusted life years (DALYs) (7). (Table 1.2 and Table 1.3)

Table 1.2 Basic Economic, Development, and Health Status Indicators

	Number	Percent	Year	Source
GDP per capita (current US\$ 2007)	786		2008	(9)
GDP per capita (PPP US\$)	1,436		2005	(8)
Growth of GDP (%)		7.0 %	2007	(2)
Currency Ksh (# KSH = 1 USD)	62.7		2007	(2)
Gini – Index	42.5			(10)
Population living below the national poverty line		52%	1990-2004	(10)
Adult Literacy (% of age 15 and older)		73.6%		(8)

Table 1.3 Top 5 Causes of Mortality among all age groups (7)

Causes	Rank	Percentage of all mortality	Percentage of DALYs
HIV/AIDS	1	40%	40%
Diarrhoeal disease	2	10%	8%
Lower respiratory infections	3	7%	11%
Tuberculosis	4	5%	6%
Malaria	4	5%	5%

HEALTH SECTOR AND FINANCING

In 2008, Kenya had 5,334 public health facilities, of which 67 percent were run by the Ministry of Health (MoH), 28 percent by nongovernmental organizations (NGOs) and missions, and the remaining 15 percent by district governments and the private sector (11). For more information regarding the relationship between different levels within the health system, please refer to Annex 1.2. The number of doctors or registered nurses was 17 per 100,000 inhabitants (2). According to 2008 accessibility surveys, 89.1 percent of the national population lives within 5 km of a public health facility. Within the capital city, 100 percent of the population is within reach of a health facility (11). Kenya's total health expenditure is equal to 4.3 percent its GDP (7), of which roughly 40 percent is made up of governmental health expenditures and the remaining 60 percent is paid through private expenditure (7). (Table 1.4)

Table 1.4 Health Financing Indicators as of 2003 (7)

	Percent	\$US
Total expenditure on health (THE) as % of GDP	4.3%	
Per capita THE		65
General government expenditure on health as % of THE	38.7%	
Per capita total government expenditure on health		25
Private expenditure on health as % of THE	61.3%	
Per capital private expenditure on health		40
General government expenditure on health as % of total government expenditure	7.2%	

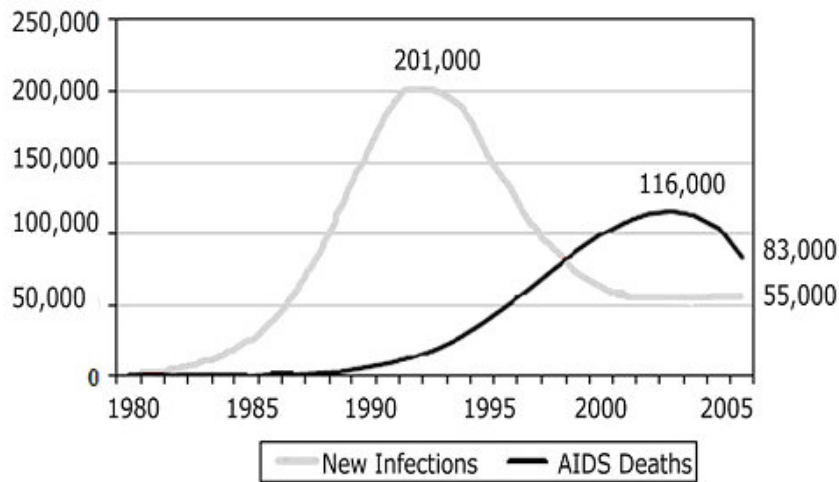
KENYA HIV/AIDS PROFILE

Similar to the start of HIV epidemics in other sub-Saharan settings, Kenya's first cases of HIV were detected among female sex workers (FSWs) in 1984 (12). Subsequent HIV infection spread from FSWs to their clients, particularly truck drivers (13), and then to the general population. In response, MoH set up an HIV/AIDS program, and the first AIDS case reporting began in 1987 (14). By the end of 1989, Kenya was already experiencing a generalized epidemic, with an estimated 4 percent of its adult population age 15 to 49 years old to be HIV positive (15).

HIV/AIDS: PEAK INCIDENCE, PREVALENCE, MORTALITY

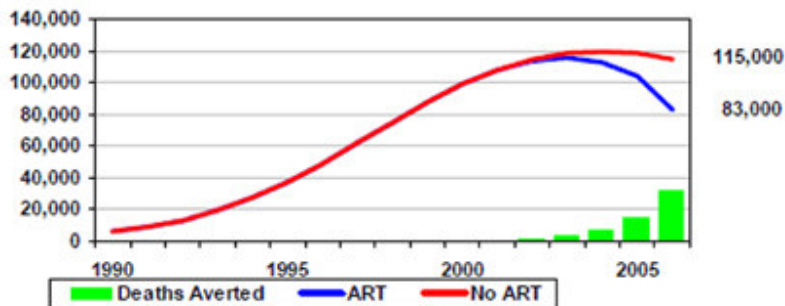
By 1993, HIV incidence was considered to have peaked with approximately 200,000 new infections (6, 12, 16). Within 4 years, urban prevalence peaked at 16 percent (6). By this time, the Kenyan government decided to officially recognize HIV as national disaster. The following year, in 1998, AIDS mortality peaked, and began to surpass new infections per year (6). In 1999, the government formed the National AIDS Control Council (NACC) to be responsible for coordinating the national response. Soon thereafter, HIV prevalence was reported to be 13.4 percent among pregnant women attending antenatal clinics (ANCs) (12). AIDS mortality, however, was just beginning to be noticeable. Between 1998 and 2003, demographers observed a 60 percent increase in AIDS deaths (16), leading to a mortality rate of 120,000 deaths per year by 2003 (12). (Fig 1.1)

Fig 1.1 New adult HIV infections and AIDS deaths from 1980 to 2006. Source: (6)



Prior to 2003, while it was possible to access antiretroviral drugs (ARVs) to treat HIV/AIDS, observers noted very little impact on AIDS mortality (Fig 1.2). At that time, there were only a little more than 10,000 HIV positive adults accessing ARVs (17). However, with the advent of free ARV access in late 2005, one began to notice an impact on HIV mortality rates (12).

Fig 1.2: Number of deaths averted by ART programme 1990-2006 Source : (6)



As of July 2008, 190,000 people living with HIV/AIDS (PLWHAs) were accessing ARV treatment (ART) (17). For the time period 2001 to 2006, NACC estimates that increased ARV access averted 57,000 deaths attributable to HIV/AIDS (6). Since 2001, this increased ARV access has corresponded to a decrease of 29 percent in AIDS deaths (12). Nevertheless, an additional 392,000 HIV infected people still require access to ART (6).

HIV/AIDS: CURRENT ESTIMATES

According to the 2007 Kenyan AIDS Indicator Survey (KAIS), 7.8 percent of adults age 15 to 49 are infected with HIV (17). These HIV prevalence reports indicate an increase from 2003, when the Kenyan Demographic Health Survey (KDHS) estimated as HIV prevalence of 6.7 percent among the adult

population. Overall, between 1.2 to 1.4 million people in Kenya are estimated to be living with HIV/AIDS (12, 17).

Increased HIV prevalence can be attributed to several causes, such as improved ARV access, reduction in AIDS mortality, and new annual HIV cases. Improved ARV access allows PLWHA to live longer (6), which is reflected by lower AIDS mortality rate. Over the past 3 years, AIDS mortality has been estimated at 85,000 per year (12).

Overall, Kenya is considered to have a mature HIV epidemic, characterized by lower incidence rates, an AIDS mortality that has surpassed new HIV infections, and a stabilizing prevalence rate, albeit at a higher level due to increased access to ARVs (6, 12, 16).

HIV/AIDS: Heterogeneity

In general, while Kenya may have a stabilizing epidemic, the stabilizing prevalence and declining incidence are not uniformly witnessed across the country. There is heterogeneity of HIV prevalence geographically, age-wise, between genders, and among subpopulations.

Geographically, the provinces of Nyanza, Nairobi, and Coast, have the highest HIV prevalence rates, at 15.3 percent, 8.9 percent, and 7.9 percent respectively (17). There is also an urban-rural differential, with more people in urban than rural areas being infected with HIV: 8.9 percent versus 7.9 percent (17). At both the provincial level and between urban-rural populations, there are more women infected than men (17). Age-wise, peak HIV prevalence is noted among women age 30 to 34 and men age 40 to 44, with prevalence being 13.3 percent and 10.2 percent, respectively (17). Among certain populations, such as FSWs and their clients, HIV prevalence is several times national estimates. Among FSWs, HIV prevalence is just below 50 percent (18), and among their clients, notably truck drivers, it is roughly 18 to 27 percent (19-21). According to NACC reports, 11 percent or approximately 750,000 couples are living with HIV. 450,000 of these couples are discordant (6).

HIV/AIDS Impact

HIV/AIDS has had a negative impact on several development indicators, such as life expectancy, IMR, and under 5 mortality rates. Between 1998 and 2003, life expectancy at birth dropped from 62 to 47 years old (12). The last time life expectancy was this low, was around the time of Kenya's independence in 1963. IMR has increased from 60 deaths per 1,000 live births in 1989 to 78 deaths per 1,000 live births in 2003 (1). Gakunju et al (22) found a relationship between increasing HIV prevalence rates and IMR, 0.05 percent increase in HIV prevalence was correlated with a 1 percent increase in IMR. Similarly, under 5 mortality trends have shown a rapid increase from 97 per 1,000 live births in 1990 to 120 per 1,000 live births in 2007 (6). While there may be several other contributing factors potentially confounding the relationship between HIV infection and life expectancy, IMR,

and under 5 mortality, the raw data reveals a troubling trend in the reversal of once-time developmental successes.

Kenya's Prevention Response

Kenya's second National HIV and AIDS Strategic Plan (KNASP) for the time period of 2005/2006 to 2009/2010 identifies the prevention of new infections in both high and low risk populations as one of its main priorities (6). It follows the principles of the "3 ones": one national coordinating authority – the National AIDS control council (NACC); one AIDS framework - the KNSAP; and one national monitoring and evaluation system, which also falls under NACC's responsibility (6).

Existing Prevention Strategies

The main thrust of KNASP's prevention initiative is to prevent new infections in the general population (6). To achieve this goal, NACC supports wide coverage of mother to child transmission (PMTCT), information education and communication (IEC) to create awareness of risky sexual behavior associated with infection, promotion of condom use, and the use of voluntary counseling and testing (VCT) to diagnose HIV status (6). For youths ages 15 to 24, the NACC supports behavior change communication (BCC) messages, stressing the importance of abstinence, delayed sexual debut, and fidelity (6).

However, coverage of prevention programmes in populations known to be at highest risk including FSWs and their sexual partners, truck drivers, MSMs, and couples living with HIV is limited (12). This omission in current prevention initiatives may be a reason why there is still such a high incidence rate within these subpopulations.

Resource Allocation

In Kenya, the majority of HIV/AIDS expenditure is funded by international donors. In terms of US dollars, this amounts to 333.8 million for the year 2006/2007 (6), which is approximately 1.3 percent of Kenya's GDP. In terms of government spending on health, HIV/AIDS accounts for 85 percent of all Ministry of Health (MoH) expenditures. If this amount of was evenly distributed to every Kenyan PLWHA, this would translate into \$US 256.73 per person. In reality, expenditure is not divided evenly among PLWHA, but is distributed as follows: 46 percent of it is allocated to ART, 24 percent goes to prevention, and an additional 18 percent goes to unknown other expenditures, leaving less than 12 percent for research and development (R&D) and pilot programmes for the most at risk groups (6). Of the 24 percent allocated to prevention, the bulk goes towards VCT and PMTCT, with minimal amounts spent on condom distribution and BCCs focusing on safer sex messages (6).

Summary of Chapter 1

Overall, Kenya's HIV epidemic appears to be declining, which is supported by recent incidence, prevalence, and mortality rates. Based on government commitments, there seems to be an inconsistency between what is reported as a priority, namely preventing new infections in both high and low risk populations, and the use of allocation of resources towards this goal. The omission of FSWs and their sexual partners, as well as serodiscordant couples, from targeted prevention initiatives remains of concern, and leaves room to wonder whether these groups are indeed of greater risk of HIV infection, and if this may account for the majority of new HIV cases within the Kenyan population.

Chapter 2: Problem Statement

This study is intended to highlight the increased risk of HIV acquisition among FSWs' regular partners (RPs), and the risk of HIV transmission to the RPs' other concurrent sexual relationships, which is not addressed by Kenya's existing prevention and control programmes. After a brief summary of the factors influencing this problem, the author presents the research objectives, hypotheses, and methodological overview for this study.

PROBLEM STATEMENT

Background Information

Kenya's distribution of new HIV infections and existing cases indicates that certain provinces bear a heavier burden of disease. After the province of Nyanza, Nairobi has the second highest share of new and existing HIV cases (12). The main mode of transmission is heterosexual sex (12). Since most Kenyans practice heterosexual sex, it is difficult to state which people and groups are more at risk. To account for those who are at most risk and be able to target these populations effectively, epidemiologists have disaggregated the category of heterosexual sex to reflect HIV infection acquired through different types of sexual relationships: regular, casual, and commercial sex partnerships (12). The bulk of new infections occur within regular partnerships, followed by casual and commercial sex relationships (12).

PROBLEM ANALYSIS

In early HIV epidemics, where HIV infection was concentrated among higher risk populations, commercial sex networks, including FSWs and their clients, were considered to play a vital role in spreading and sustaining the HIV epidemic (13, 23-25). Comparatively, in more generalized epidemics, sexual transmission within regular partnerships, such as married couples and steady sexual relationships, is considered to be the primary means of transmitting and sustaining the HIV epidemic (15, 26, 27). It is necessary, therefore, to reexamine the role of FSWs and their sexual partners in the context of a mature generalized epidemic (12, 15, 26-29).

Previously, research programmes focused on preventing new infections among FSWs and their clients, the vector through which it was assumed most new infections occurred. In the early phases of the HIV epidemic, programmes targeting FSWs and their clients were found to be successful at improving condom use (30-35), and had a noticeable impact on STI (30, 31) and HIV incidence (30) within and beyond these populations.

Nowadays, researchers are aware that many FSWs have regular partners with whom there is poor acceptance of condom use. Furthermore, evidence reveals as FSWs age, they become more likely to be infected with HIV, and anecdotally, to have steady sexual partners. For more than 20 years, prevention strategies have targeted FSWs' sexual behavior in an attempt to improve condom use within their sexual relationships with their RPs. None of

these programmes, to this author's knowledge, have reported significant improvements in condom use (28, 36-40).

This issue of poor acceptability of condom use within steady relationships is not restricted to FSW-RP relationships, but is also mirrored in other lower risk partnerships, for example husband-wife relationships within the general population. It is possible that the underlying reasons why condom use is not acceptable may be similar, such as perception of HIV risk, intimacy levels, and desire to have children (12, 15, 26-29).

Yet there is an important difference in how much these two relationship types contribute to the transmission of HIV in Kenya. The majority of Kenyan women and men report few lifetime partners (41), and even fewer report multiple overlapping partner(1), also referred to as concurrent partners. In comparison, FSWs and their sexual partners, casual clients and regular partners report many lifetime and concurrent partners (41). Both concurrency of sexual partners and unprotected sexual intercourse are considered the main drivers of the Kenyan HIV epidemic (12). FSWs and their sexual partners, particularly FSWs' RPs report higher concurrency levels, higher rates of unprotected sexual intercourse, and are estimated to have higher levels of HIV than the general population.

PUBLIC HEALTH RELEVANCE – STUDY JUSTIFICATION

While there is plenty of documentation supporting FSWs' concurrency, sexual behavior, and STI prevalence, there is little documentation on RPs. One of the primary reasons for this is that FSWs' RPs are difficult to identify and recruit into surveys and prevention programmes. Of what is known from other settings, FSWs' RPs have higher levels of concurrency (28, 36), higher rates of unprotected sexual intercourse with partners from different HIV risk populations (42, 43), and higher than average STIs and HIV prevalence levels (36, 38, 44).

Based on FSW reports of perceived intimacy, duration of sexual relationship, and sexual practices within their partnerships, these relationships could be considered in the same category as other regular, steady partnerships. If considered under the category of regular partnerships, FSW-RP couples may be at the highest risk of acquiring HIV/STI infections within their relationship (28). In addition to this high risk of HIV acquisition within their relationship, RPs report high levels of unprotected sex, sexual networking, and concurrency, indicating that FSWs' RPs may be a more important bridging population for HIV in Kenya's epidemic than FSWs clients.

However, without first being able to identify and access RPs, it is difficult to assess their role in mature HIV epidemics. As such, it was imperative to conduct a preliminary survey to understand the nature of FSW-RP relationships, including how FSWs perceive their relationships with their RPs, the sexual behavior within and outside the context of this relationship, as well as the prevalence of HIV and other STIs in these two populations.

STUDY QUESTIONS

(Please refer to Annex 2.1 Research Table)

RESEARCH OBJECTIVES

ULTIMATE GOAL

To provide current Kenyan government initiatives with the relevant demographic, epidemiological and sexual behavior characteristics of FSWs and their regular partners in order to add to the understanding of this at risk population and contribute to the development of better HIV prevention programmes.

OVERALL RESEARCH OBJECTIVES

To describe and analyse factors of sexual risk taking and networking among FSWs and their RPs, in order to identify whether RPs are a possible bridging population in Kenya's HIV epidemic, based on their sexual risk-taking and networking behaviours and their HIV-1 and STI levels.

SPECIFIC RESEARCH OBJECTIVES

1. To describe background characteristics of FSWs and their RPs.
2. To describe sexual risk-taking characteristics from an FSW's perspective with her RP, from an RP perspective with his FSW partner, and from an FSW's perspective with her clients, in order to identify factors associated with sexual risk taking.
3. To describe RPs sexual risk-taking and networking characteristics with his concurrent partners
4. To assess point prevalence of HIV and other common STIs (*N. gonorrhoea*, *C.trachomatis*, syphilis, and *Herpes simplex type 2*) in FSWs and their RPs, and the levels of seroconcordancy within these couples.
5. To discuss the possible role of RPs as a bridge population within the dynamics of HIV transmission in Kenya.
6. To compare self-reported sexual risk-taking with biological indicators such as the prevalence of HIV-1 and other STIs, in order to identify factors associated with HIV-1 and other STIs.
7. To critically appraise this study's design, including the internal reliability and validity of self-reported questionnaires, by comparing levels of sexual risk-taking reported by each member of an FSW-RP pair.
8. To identify the current gaps in Kenya's HIV national policy, programmes, and research, in order to assess what new knowledge has been generated by this descriptive cross sectional survey.

RESEARCH HYPOTHESES

1. Within the context of an FSW-RP relationship, sexual risk-taking and networking is frequent.
2. Outside of the FSW-RP sexual relationship, a large proportion of RPs engage in concurrent unprotected sexual relationships.
3. Compared to the general Kenyan population, both FSWs and RPs will have high levels of HIV-1 and other STIs.
4. HIV-1 and other STIs are significantly associated with low condom use, concurrency of other sexual relationships, and high frequency of partners.
5. FSWs under-report sexual risk-taking to clinic staff due to social desirability bias, while RPs report more frequent sexual risk-taking.

RESEARCH METHODOLOGY OVERVIEW

In order to achieve this study's objectives, the author conducted a literature review to describe Kenya's HIV transmission dynamics, and to report what is already known about FSWs' relationship with their regular partners. For more details of literature review methodology, including search strategy, and study type limitations, please refer to Annex 2.2. In order to adequately cover these objectives, the paper also reports the findings based on a descriptive cross sectional survey designed and conducted by the author from June 2005 to February 2006. This cross sectional methodology review is further described in Chapter 4.

Literature Review Study Limitations

Selection bias is the main limitation of this literature review. Firstly, this author only reviewed documents written or translated in English. This language bias could reduce the already limited information on FSWs and their RPs, and impact the author's ability to assess whether RPs could be a potential bridging population. Secondly, the author only presents published findings. The publication bias expected is to potentially positively bias her analyses, such that only factors that are found to be significantly associated with HIV outcome within FSW-RP couple would be published, thereby, possibly overestimating the FSWs' potential as a BP. Thirdly, since there are few studies focusing on FSW-RP relationships, there is a good chance that the literature is not representative of these relationships, and there will be challenges to generalize the findings to other contexts.

Summary of Chapter 2:

This chapter describes the higher risk of HIV infection within FSW-RP relationships, which is not currently addressed by existing Kenyan prevention efforts. It highlights the importance of conducting primary research on these partnerships to ascertain whether FSWs' RPs are a potential bridging population for HIV and other STIs in the Kenyan HIV epidemic. Lastly, this chapter summarizes the thesis methodology. In the following chapter, the author will report her findings from the literature review.

Chapter 3: Literature Review

In this literature review is divided into 2 sections. The first section provides a brief description of the current Kenyan HIV transmission dynamics, and how existing prevention strategies do not adequately target the most at risk populations, nor do target sexual behaviours within these partnerships. The second section concentrates on the role of FSWs' RPs in HIV transmission, why existing strategies do not work with this population, and as a consequence, result in FSWs' RPs to be a potential bridging population for HIV and other STIs into the Kenyan population.

Kenyan HIV Transmission Dynamics

Know your Epidemic

While measuring HIV prevalence is important in knowing who is already infected with HIV, it is not the best measure to understand current transmission dynamics (45). A better indicator of current HIV transmission dynamics is measuring HIV incidence trends because they indicate who is at greatest risk of HIV infection now. This immediacy of knowing who is most at risk now, and under what circumstances these new infections occurring, allow country's to prioritize their limited resources on where most of the new infections are occurring (46).

Last 1000 Infections

Based on this understanding, there is a growing consensus to know who infects whom, and in which populations, the last 1000 new infections occurring (46). As previously mentioned, Kenya's main mode of HIV transmission is through heterosexual intercourse(12) (Table 3.1).

Table 3.1 Percent of New infections by HIV-group Source: (12)

Groups	National	Nairobi
Heterosexual sex within union/regular partnership	44.1 %	37.4 %
Casual heterosexual sex (CHS)	20.3 %	23.0 %
Sex workers and Clients	14.1 %	14.7 %
MSM and Prison	15.2 %	16.4 %
Injecting Drug Use (IDU)	3.8 %	5.8 %
Health Facility Related	2.5 %	2.7 %
Number of New Infections	76,315	10,155

To illuminate the numbers on Table 3.1, if one were to look at the last 1000 infections in Kenya, 441 of them would have occurred within regular partnerships, 203 would have acquired through casual heterosexual relationships, and 141 of them would have been among sex workers and their clients. Other substantial contributions to new HIV infections would come from men having sex with men and injection drug use (12).

While Incidence modeling, as illustrated in Table 3.1, may be a great at highlighting whose at most risk for new infections, one need to also reflect upon its limitations – namely how mathematical modelers define risk populations and whether they have sufficient epidemiological and behavioral information to accurately capture true risk of infections. With FSWs and their

regular partners, both the definitions and sufficiency of information is suspect.

Risk Profiles and Definitions of “FSWs” and their “Regular Partners”

In Table 3.1, the operational definition of sex work has loosely been defined as money, gifts, and or other benefits exchanged for sex (47). While female sex workers (FSWs) are women who in exchange sexual services accept money or gifts. This most recent incidence model(12) estimates roughly 2% of the Kenyan population fit under the category of sex workers, which is an estimated 382,000 people. However, previous mathematical modelling for the KDHS 2003, estimated 5% of Kenya’s population can loosely be defined as sex workers(1). This simple difference in estimating percentage of total population, immediately changes the overall contribution of a particular at risk population. The recent incidence modelling appears to be a more conservative estimate of the total number of sex workers. Yet in both the recent incidence modelling and older KDHS 2003 estimates, what is not clear is whether sex work above includes transactional sex work, ie. the exchange of gifts and other non material goods for sex. Furthermore, the boundary dividing FSWs, transactional sex workers, wives, and girlfriends in the general population is blurry.

The overall contribution of a particular at risk population to an HIV epidemic is primarily dependent on 3 factors: the size of population at risk, the prevalence of existing HIV infection and STIs, the number of concurrent sexual partners.

How FSWs defined is important when determining the size of FSW population (47) and their impact on the Kenyan HIV epidemic (Talbot et al., 2007), as captured by incidence modeling. If sex work is narrowly defined, as exchanging just monetary goods, the population of FSWs would shrink (47). However, broadening the sex worker definition to include monetary, gifts, or other material goods, one could conceivably even include women from the general population. An additional challenge to enumerating the actual population size of FSWs is that in Kenya, sex work is criminalized(48), so that a large part of it is hidden from the rest of the population. In Kenya, in Gelmon et al’s (12) report they estimate 60,000 FSWs in Nairobi alone. The relationship between FSW population size, and its influence on the Kenyan HIV epidemic is determined by the number of sexual partners FSWs have, as well as the prevalence of HIV infection in FSWs and their partners(49).

Compared to the general population’s HIV prevalence, both FSWs and their clients are considered to have prevalence levels several times higher than the national average (12). FSWs estimated to have an HIV prevalence of just below 50 % (18), and of the surveys done on their clients estimate HIV prevalence to be between 18 to 27 % (19, 20). Comparatively, FSWs clients are even harder to estimate (50), since possibly the only defining commonality in risk is that they have sex with an FSW. In Carael et al.’s (50)

2006 publication, the authors estimate between 10 to 11% of men exchanged sex for money in the past 12 months, roughly translating into 1 million Kenyan men who purchased sex in the past 12 months. Both these at-risk populations amount to quite a few number of people (sex workers + male clients = 1,337, 000 people) at risk. Well documented are the high numbers of concurrent partners, HIV prevalence among FSWs and their clients(51). Consequently, they are estimated to contribute to 14.7 % of new infections among adults in Nairobi (12).

However, FSWs' regular partners are also believed to have both high HIV and STI prevalence, and multiple concurrent partnerships, and yet, they are not formally included in Kenya's HIV Prevention Response and Modes of Transmission Analyses(12). However, this report does highlights an increased risk of HIV transmission among FSWs regular sexual partners, and in turn, these men's regular sexual partners(12). Part of the reason FSWs' RPs are not included in these incidence modeling analyses is because there is inadequate epidemiological and sexual behavioral information about them, making it difficult to estimate the true rate of new infections attributable to these partnerships and to the greater Kenyan population.

What is included is information about new infections within FSWs and their clients, and within regular partnerships. Compared to the new infections within steady sexual partners, accounting for 37.4 percent, FSWs, their clients, and their clients' partners are estimated to account for 14.7 percent of new infection in Nairobi (12). Yet it is unclear whether a proportion of sex within regular partnerships does include FSW-RP relationships. However, under prior incidence models, infections within regular partnerships fell under low risk category (29), and as such, one can theorize the role of FSW and their RPs might have been omitted, thereby resulting in an underestimation of FSWs and their sexual partners' role in the HIV epidemic. As well, if FSW-RP relationships are underestimated in incidence models, one can implicitly assume, they may be underestimated in the number of HIV serodiscordant couples. Despite limitations of epidemiological and behavioral information, the report highlights the importance of FSWs and their regular partners (RPs) in the Kenyan epidemic because of the reported low acceptability of condom use within this sexual relationship, increased exposure to HIV and other STIs within FSWs occupation, and reported higher levels of concurrency by both FSWs and their RPs (12).

Gaps in Existing Kenyan Prevention Strategies: Most at Risk Populations

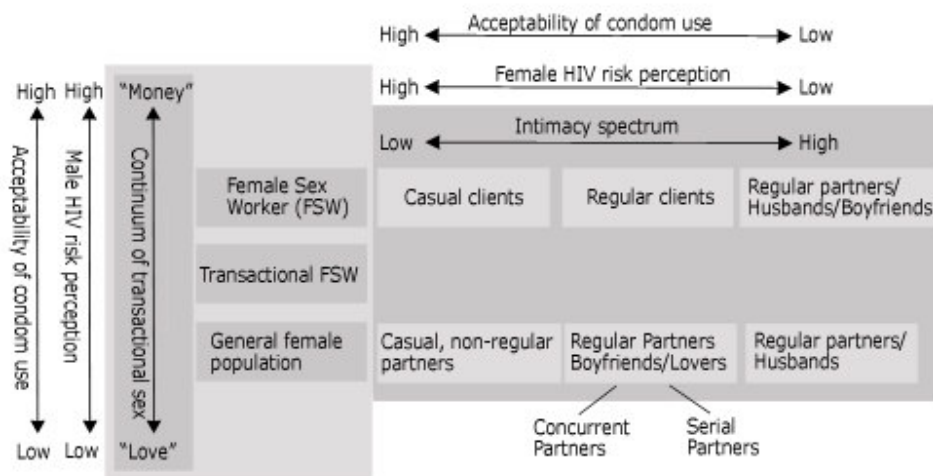
Awareness of a country's main modes of HIV transmission and what populations are at greatest risk for new infections ought to make it easier to develop effective prevention strategies, but this is not the case. There has been widespread exclusion of FSWs and their sexual partners, MSMs, and IDUs from existing prevention responses, be it BCC messages, STI treatment and care or condom distribution (12). This is possibly due to the illegal nature of this behavior and/or the stigma surrounding these at-risk populations (6). However, this may be one of the most important omissions

in current prevention initiatives along with the absence of gender specific risk reduction strategies for couples living with HIV (12).

Moreover, recent in government publications there appears to be a critical missing link between KNASP’s stated priority of preventing new infections among high risk populations and allocation of resources and implementation of prevention initiatives towards this goal. In particular, the lack of targeted programs addressing FSWs and their partners, as well as serodiscordant couples is a matter of concern. Given the possibility that a number of new infections may still occur among high risk populations, it is appear that there is a pervasive blindspot in government planning and implementation of programmes targeted where most new infections are occurring (12).

Of the prevention programmes that do exist, they are often run by Kenyan or international research groups or agencies, and are offered in a limited number of settings, separate from MoH facilities(6, 12). It is not a far stretch to posit that within FSW-RP partnerships exist the phenomena of HIV serodiscordancy, and there may be overlapping HIV risk factors, such as higher perceived intimacy within these more intimate relationships influencing perception of HIV risk and acceptability of condom use. Please see Fig 3.1. In both high risk FSW-RP and low risk husband-wife in the general population, condom acceptability is poor. Researchers posit the underlying reason for low condom use within these partnerships is related to perceived high levels of trust and intimacy that can exist in long term relationships(52). Combined together, these perceived levels of trust, intimacy, duration of a relationship and familiarity, may obscure an individual’s ability to accurately perceive his or her HIV risk within a partnership(53).

Fig 3.1: Relating Percieved intimacy level and HIV risk perception with the Acceptability of Condom use in different at risk couples



Consequently, in both relationship high risk and low risk regular partnerships similar scenerios, risk of HIV exposure exists, and the need (53) to develop similar prevention responses.

RPs: What is known

Since few studies have been done on FSWs' regular partners (RPs), the author will use findings from studies reporting both on male clients and where possible highlight those sexual partners whom FSWs consider more regular. In studies where researchers were able to interview male clients of FSWs, they confirmed that when men pay for sex, they are more likely to use condoms (37, 54-56). Comparatively in relationships where male clients do not pay for sex, they are less likely to use a condom, even if their partner is a FSW (37, 55, 56). Furthermore, there appears to be a spectrum of male client behavior, which is contingent upon how 'steady' they determine a sexual partner was deemed to be (57, 58). Orubuloye et al. (58) described male clients, who were married, use condoms 84% of the time with a FSW, whereas, they only used condoms 4% of the time with their spouse (58). Other studies indicate that male clients use condoms the most with casual FSWs, the least with spouse, and intermediate with extramarital or non-marital partners, which include casual and steady girlfriends, who are not part of commercial sex relationships (37, 59). Therefore, the more 'steady' a sexual partner is, the less likely a FSW's male client will wear a condom.

Not only are male client studies useful in reporting their sexual risk-taking behavior, they can also be used as a validation method to check whether FSWs questionnaire answers are credible. Studies from Zimbabwe, Gambia, and Benin, demonstrate that FSWs reported condom use to be 10-24% higher than male client reports (60) (36, 61). Social desirability bias¹ may account for the differences observed in FSW and their male clients' condom use, particularly in the way FSWs respond. If social desirability bias affects the FSWs responses, FSWs would over report condom use because it would present them as reducing their sexual risk, which is what is exactly seen from FSWs in Zimbabwe, Gambia, and Benin. This scenario is especially plausible because several studies on FSW sexual behavior are associated with an HIV prevention program, which encouraged FSWs to use condom use with their sexual partners. The ability to validate sexual risk-taking answers is of utmost importance in designing effective HIV prevention programs.

As previous FSWs studies asserted, male clients of FSWs do not use condoms with their FSW regular partner, because to these men, their intimate relationship did not signify high risk behavior (37, 54-56). Consistent with documented FSW behavior with regular clients, certain male clients behaved as though their sexual relationship was safe, and basing this safety upon emotions, such as intimacy, trust, and fidelity (55). Voeten et

¹ **Bias: Systematic errors that can push the scores in a given direction. Bias may lead to 'finding' the results that the researcher wanted.**

al. (37) specified FSWs' clients trusted their FSWs partners because they had known each other for a while, believed their partner did not have an STD, and believed that they were the only client with whom the FSW did not use a condom. Furthermore, Voeten et al. (37) suggest male clients who didn't want to use condoms knew where they could obtain such services, and they frequented these places repeatedly and had unprotected sex (37, 62). A similar suggestion has been asserted for regular clients in Thailand; Havanon et al. (62) claim male clients are clearly aware of the advantages of being a regular client, whereby some clients seek the same FSW repeatedly, in the hopes of persuading her to not use condoms during sex (62).

Disconcertingly, Voeten et al. (37, 63) indicated some clients have also been recently infected with an STI by a FSW whom they trusted, demonstrating that these women had unprotected sex with another man, potentially, another male client. Additionally, Tabrizi et al. (63) revealed that clients of FSWs in Thailand exhibited a high rate of STIs. From 6% *C. trachomatis*, 16% *N. gonorrhoea*, 1% *T. vaginalis*, 8% herpes simplex virus (HSV) (5% HSV-1 and 4% HSV-2), and 1 % HIV.

Since HIV transmission is quite low, multiple partnerships play a crucial role in driving the HIV epidemic, particularly in promiscuous people such as FSWs and their clients (64). In monogamous couples where one partner is infected with HIV-1, HIV transmission is thought to be between 0.1% and 0.3% (65, 66). In such cases, sexual acts where the viral load is less than 1700 per mL of semen, the probability of HIV infection is 0.001 per sexual act (66). However, when the HIV viral load climbs to 38, 500 copies or more per mL of sperm, HIV transmission probability increases to .0023 (66). Additionally, Gray et al. (66) determined that HIV transmission increased to .0041 with a genital ulceration.

What increases HIV transmission are STIs because they increase HIV shedding in body fluids and an individual's susceptibility to HIV (25, 67, 68). Furthermore, there are two major periods of HIV infection: first is immediately after being infected with HIV; second is at the end stage where there is an increasing amount of HIV viral load in blood, resulting in increased HIV shedding in various body fluids. In between the two periods is the latent phase, which is characterized by a negligible amount of HIV shedding. However, if an individual is infected with an STI, HIV shedding is augmented. Consequently, the latent period is interrupted, and the duration of HIV transmission infectivity is increased (69). 'Latent period' is also important as it is characterized as mainly asymptomatic, so the patient is rarely aware that they are infected. Therefore, the latent period may increase the likelihood of HIV transmission because there is no reduction in promiscuous risky behavior.

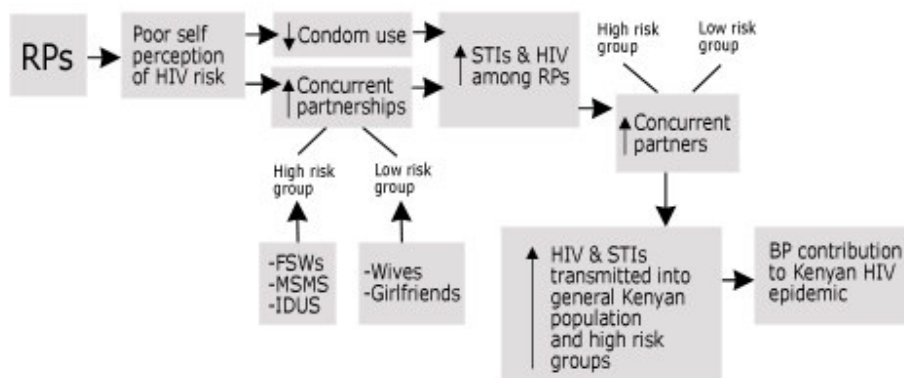
Under a monogamous heterosexual relationship, HIV is not easily acquired because it would be unlikely that a single act of intercourse would

be sufficient for transmission. However due to the very nature of sex work, FSWs have a high frequency of concurrent partners with fewer sexual acts, resulting in their clients and themselves as having a greater chance of encountering STIs and HIV infection (68). In the absence of STIs, these high-risk groups such as FSWs and their clients are less likely to acquire and transmit HIV.

Lowndes et al. (36) determined there was a gradient in HIV prevalence of clients of FSWs, with casual clients at 8.4%, personnel at 12.2%, and boyfriends at 16.1%. Clearly from these few studies, male clients of FSWs, especially boyfriends or regular clients pose a significant risk for STI and HIV transmission to other FSWs and to the general population. This HIV gradient is also found in Cote et al.'s (57) study, where boyfriends of FSWs have the highest HIV prevalence rate at 32.1%, followed by on-site personnel, such as bar owners, barmen, and security guards, with 17.5% HIV prevalence rate. In both cases, the HIV prevalence rate appears to correspond to levels of unprotected sex between FSW's clients and FSWs. In Cote et al.'s (57) study, there were four types of male clients with varying degrees of sexual behavior. Condom use with boyfriends were the least, followed by on-site personnel and clients of home-based FSWs, and lastly, then clients of mobile FSWs, which included FSWs who practiced at nightclubs and lodges. In another study, researchers discovered that the variation in client condom use and HIV prevalence was also associated with where FSW practiced, at a nightclub/lodge or home (37). FSWs who worked in nightclub or lodge had an HIV prevalence of 26%. Comparatively, home-based FSWs had an HIV prevalence of 76%, and their boyfriends had an HIV prevalence² of 39% (37).

In order to understand STI and HIV transmission, epidemiologists have begun to emphasize on the number of sexual partners an individual has and under what risk category do these sexual partners belong to (54). FSWs' male clients already have sexual partners who belong to the 'core transmitter' group, which increases their chances of acquiring an STI (42) (36, 63). However, many studies indicate, FSWs' clients have other sexual partners who belong to different sexual networks. Risks of STIs in open sexual networks can be exacerbated by individuals participating in concurrent sexual relationships. Under these circumstances, STI transmission can occur quickly. During the duration of STI infectivity, all sexual partners can be exposed to the STI almost simultaneously. As a consequence, there is no time lost in developing a new partnership after an STI has been acquired (Morris and Kretzchmar, 1995). Several studies of FSW clients indicate that they have concurrent sexual partners, which may include wives, casual girlfriends, steady girlfriends, and other casual FSWs(36, 37, 60, 70-72). These factors are summarized in Fig 3.2.

Fig 3.2 RPs: Bridging Population Characteristics



Summary of Chapter 3:

This literature review on FSWs’ sexual partners- clients and regular partners- reveals that male clients have many sexual partner coupled with high rates of concurrency and STIs, and low rates of condom use, especially among regular partners or boyfriends of FSWs. In particular, regular clients or boyfriends are a cause for concern in future HIV intervention programs, because in comparison to the other types of male clients, they appear to be the most likely of male clients to engage in risky behavior such as unprotected sex, to possess the highest rates of STIs including HIV, and to participate in concurrent sexual relationships. Although the studies included in this paper indicate male clients as potential candidates for ‘bridging’ STIs and HIV transmission, it is particularly the boyfriends of FSWs who pose the most significant threat, fueling the HIV epidemic.

Chapter 4: Methodology

Chapter 4 describes the methodology used in this descriptive cross-sectional study, followed by a summary of the study limitations.

4.1 Study Type

Between June 2005 and February 2006, a pilot project was designed to assess the potential role of FSWs' RPs as a bridging population for STIs and HIV into the general Kenyan population. This pilot project was designed as a descriptive cross sectional study, and was intended to act as a snapshot of the background characteristics FSWs and their RPs, the sexual behaviour practised within and outside of FSW-RP relationships, and to measure STI prevalence among FSWs and their RPs. The study's findings are intended to apply for funding to establish a prospective male cohort.

4.2 Study Setting:

Nairobi

Nairobi has an estimated 154,000 adults living with HIV/AIDS (PLWHA), which translates to roughly 8.9 percent of its population(12). Heterosexual sex is the main mode transmission. FSWs and their sexual partners, particularly their RPs are still considered to be important in HIV transmission dynamics (12). FSWs were one of the first at risk populations to have been targeted by research studies and prevention and control initiatives, and, the Pumwani/Majengo research cohort is considered to be one of the earliest FSW sex worker cohorts in Africa.

Enrollement into the Pumwani/Majengo Research Cohort

In 1985, researchers from the Universities of Manitoa and Nairobi began to enrol self-identified sex workers from Nairobi's Majengo slums into a prospective cohort to study outbreaks of genital ulcer disease (chancroid) (13, 73). They soon began to notice a connection between HIV infection among self-identified FSWs and chancroid infection in their sexual partners. To continue their investigation, researchers began to enrol more self identified FSWs, which they defined as women who reported receiving money or gifts in exchange for sex during the month prior to enrolment in the research cohort (74).

Initially, only self identified FSWs were enrolled in the cohort, but over time, researchers also began to make use of existing FSW- peer networks. Connections with these peer networks were more formally established through risk reduction interventions (32), and researchers began to rely on FSWs-peers to identify and recruit new FSW enrolees into the cohort. Once recruited, clinic staff at the Majengo health clinic screened these peer-identified or self-identified FSWs, in order to minimise possibility of enrolling women who did not fit the selection criteria. The research cohort enrolled women regardless of their HIV status. Once enrolled, FSWs were informed of ongoing studies, and offered clinic services free of charge (18). As the cohort grew, funds were also secured to provide HIV prevention and care. Currently, the Majengo health clinic serves as entry point for HIV research as well as

prevention and care (48). As well, the research group has also established new collaborative links with the Universities of Oxford, Toronto, and Washington (48).

Clinic services include the provision of free male condoms, treatment of symptomatic STIs, bi-annual screening and treatment for asymptomatic STIs, and risk reduction counselling. Additionally, women are encouraged to attend sex worker community meetings led by FSW peer leaders, in which attendees to discuss a variety of risk reduction strategies, such as negotiation of condom use, charge per sexual acts, and how to remain adherent to ART. Women are still able to access clinic services, even after they report no longer practising as a sex worker.

General Procedures for Enrolment into Ongoing Studies

Participants must give their informed consent prior to enrolment in any study. To prevent research overload on enrolled FSWs, the bulk of research activities are restricted to bi-annual resurveys. Every 6 months, all clinic attendees are invited return to the clinic to answer a standardized questionnaire and to give blood, urine, and cervical samples for STI/HIV diagnoses. Women found to be positive for STIs are treated in accordance with Kenyan National STI guidelines (18). Enrolled FSWs are compensated for their travel fees, which roughly amount to 50 Ksh³ per FSW. On average, 500 to 700 FSWs return to the clinic during each resurvey period. Women are able to access clinic services irrespective of their participation in ongoing studies.

4.3 Prior to Enrolment Procedures

To assess the potential role of FSWs' RPs in the Kenyan HIV epidemic, the author conducted a literature review. Based on the findings of this literature review, she designed 2 socio-demographic and sexual history questionnaires, one for FSW and one for RP. These questionnaires were submitted along with a research proposal (Annex 4.1) and information letter for male participants (Annex 4.2) to the University of Toronto International Health Programme. The author received funding for this project from the University of Toronto.

Prior to enrolment in this study, the clinic staff at Majengo health clinic organized a sex worker community meeting for FSWs who reported having regular partners. At this meeting, clinic staff explained the proposed study, and requested FSWs' collaboration in recruiting their RPs to participate. Attending FSWs were given an information letter to pass to their regular partners (Annex 4.3). Previous efforts to recruit FSWs' RPs has built up trust between FSWs and the clinic staff and alleviated concerns that the study would jeopardize their relationship with their RP, as well as respect the privacy and confidentiality of these intimate relationships.

³ 50 Ksh= 0.70 \$US 2005 (\$1US dollar in 2005 was 70 Ksh)

The research proposal, questionnaires, and subject information form for male participants were submitted to the University of Toronto's Research and Ethics Board and Kenya National Hospital and Ethics and Research Committee for approval. The pilot project was approved for the period of June 16th 2005 to June 15th 2006 (Annex 4.4).

4.4 Data Collection Procedure

Data Collection Instruments: Fine Tuning and Piloting Questionnaires

Once ethical approval was received, the author began pre-testing and piloting the study instruments. Behavioural questionnaires were first piloted with veteran clinic staff to test whether the questions were relevant to current cohort characteristics, and were culturally appropriate for discussing sensitive topics, such as sexual behaviour and risk taking practises. Clinic staff were invited to give feedback and raise questions concerning the study design and instruments used. This feedback was incorporated in the final design of the questionnaires.

Once the content of the questionnaires were finalized, they were translated by 2 different nurses from English to Kiswahili, and then back into English to see whether the Kiswahili questions preserved the intended meaning and captured relevant information. Where the questionnaires differed, clinic staff were asked to help resolve the problem. FSW (Annex 4.5) and RP (Annex 4.6) questionnaires were then piloted on clinic staff. Skip patterns were introduced in relevant places to speed up the process, and out of sequence questions were removed.

Selecting Study Sites

The selection of study sites was based on 4 criteria: confidentiality, availability, accessibility, and familiarity.

Initially, this study was designed to enroll both women and men into the same health clinic. However, clinic staff raised concerns about violating the confidentiality of FSWs, who may not have disclosed their FSW status to their RPs. It was noted that several FSWs may share overlapping RPs. In order to preserve the confidentiality and privacy of all parties involved, clinic staff felt it important that RPs be surveyed in another setting outside of Majengo health clinic, which is well known in the community as a sex worker clinic. Consequently, the author looked for other study settings. Please refer to Annex 4.7 for more detailed description of study selection criteria for the study site.

Research Team:

Majengo health clinic and Pumwani mother to child health (MCH) clinic staff were involved in the study design, recruitment, and data collection process. The author held several sessions prior to the resurvey period to train the 2 doctors who would be overseeing the clinic procedures. At the Majengo health clinic, nurses were employed in enrolling into the registry, surveying, drawing blood and collecting from FSWs. At the MCH clinic, the doctor

surveyed the RPs, and nurses drew blood and collected urine samples. The author oversaw the entire process, going back and forth to both clinics, double checking how the questionnaires were filled in, and inputting them into a SPSS database.

4.5 Study Population

Characteristics of FSWs enrolled in the Pumwani/Majengo Cohort

At the time of the study, over 2200 women were enrolled in the Pumwani/Majengo cohort. New clinic enrollees account for an additional 100 women per year (18). Baseline HIV-1 seropositivity for all women is extremely high, with approximately 60 percent of women testing positive for HIV infection at enrolment. In the mid to late 1980s, around the time this cohort was established, the initial incidence rate for HIV infection was 45 percent per year. Currently, the annual incidence rate is 10 percent per year, despite the existing intervention programmes: free male condoms, risk reduction counselling, and prompt treatment of symptomatic STIs. The high rates of prevalence and incidence underscore the elevated risk of HIV transmission and acquisition within this vulnerable population.

On average women reported 5 sexual partners per day, and most charged below 150 Ksh⁴ per sexual act (32). Incidence of gonorrhoea, syphilis, and Chlamydia, is infrequent (31), however, in comparison with incidence rates in the early 1980s, HSV-2 infection common (18).

Regular Partners

According to resurvey findings, more than 50 percent of FSWs have at least 1 regular client, paying or not. This places the population of FSWs with RPs at roughly 1100 (Fig 4.1). Of these, FSWs reported having 1-2 regular clients, translating to an estimated sample of 1100-2200 RPs (Fig 4.1).

Within FSW-RP relationships, FSWs reported lower condom use compared with their casual clients (74). HIV and STI testing has been available to RPs on request. However, no in-depth research has been done on this population.

4.6 Sampling and Recruitment

FSWs are recruited into Majengo Research cohort is through well-established FSW-peer networks, as well as through outreach visits conducted by clinic staff. Those FSWs reporting a regular partner were invited to participate in this study. FSWs were given the freedom to define their regular partner as either paying or non paying, and collaborated in recruiting their regular partner into the study. First, FSWs gave a letter to their RP inviting them to participate in the study and contact the residing clinic doctor with any questions. FSWs who received positive responses were given a recruitment slip (Annex 4.8) for their RPs to bring to the Pumwani MCH clinic, in order to enrol them into the study.

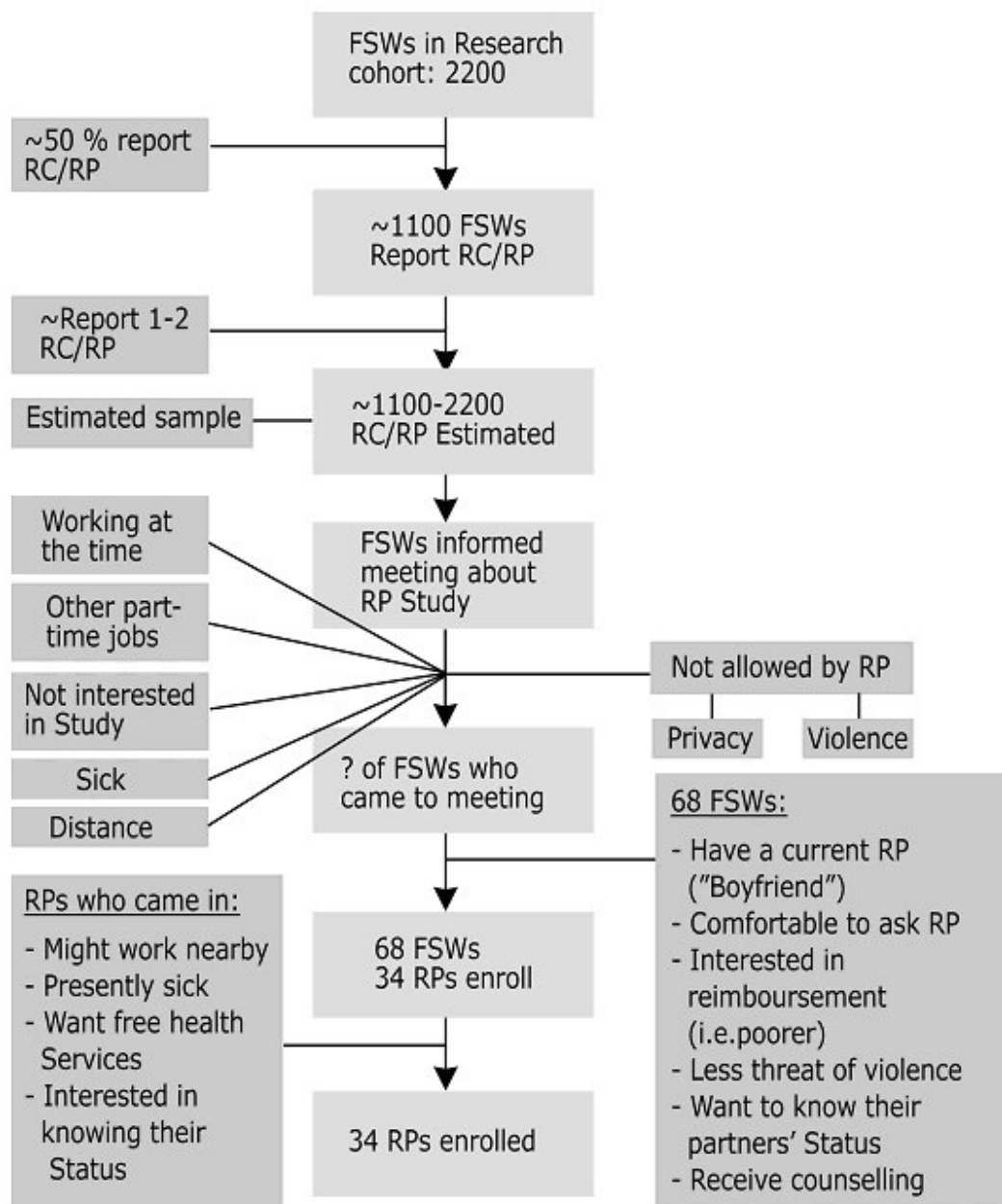
The study aimed to recruit 50 FSW-RP pairs from the population.

⁴ 150 Ksh= 2.14 \$US 2005

4.6a Response Rate

I was unable to attend meeting at which the Majengo health clinic staff invited FSWs who reported having an RP to participate in the study. As a result, it is hard to know FSWs were interested in doing so. Ultimately, 68 FSWs who reported having an RP as well as 34 RPs chose to enrol in the study (Fig 4.1, Annex 4.9).

Fig 4.1: Sampling and Recruitment



4.7 Study Enrolment

(Please refer to Annex 4.10 for more details)

Laboratory Procedures

(Please refer to Annex 4.10 for more details)

4.8 Data Analysis and Process

All study participants were linked to a coded personal identifier, which was used in the database instead of an individuals' name. No personal identifiers, names, social security numbers, or addresses were included in the database, and only study staff had access to the database.

Prior to inputting the questionnaire data, the author double checked whether answers were filled in correctly. Initially, there were two separate databases: one for female participants, and another for males. Once RPs were matched to FSW pairs, the databases were merged. The merged database included all socio-demographic, sexual behavior data captured in the questionnaire, and also all the STI results from clinical examinations.

Statistical Analysis

Descriptive statistics were used to describe the socio-demographic and sexual behavioral characteristics of FSWs and RPs. Self-reported condom use, weekly number of reported clients, and number of RPs were recorded. Condom use was reported on a semi-quantitative scale, which has been standard practice in the Majengo research cohort: 0=Never (0%); 1=Rarely (1-24%); 2=Sometimes (25-49%); 3= Often (50-74%); 4= Almost always (75-99%); 5= Always (100%). Clients were divided into two categories: casual clients, described as one time customers, and regular clients, described as repeat paying customers. Regular partners were self-identified by FSWs, as long term partners, and included husbands, boyfriends, and lovers. In order to determine whether regular partners were different than regular paying clients, we asked each FSW to define her relationship with her RP, how he supports her, and whether he continues to pay for sex.

Since the dataset comprised only of 34 FSW-RPs, the author used the explore feature on SPSS 17.0 to double check whether continuous variables were distributed normally, most variables were found to not be normally distributed. While the author recognizes these variables are not normally distributed, for the purpose of this thesis, the author using parametric tests instead of non-parametric ones. There are two reasons for this decision: time constraints, and ease of reading data analyses from continuous variables. For univariate analyses, the author uses Chi-square test to compare dichotomous variables and ordinal variables, and Independent t-test for comparisons using continuous data. These analyses are 2 sided, and the author only reports significant differences if the p value <0.05. Where possible in univariate analyses of dichotomous variables, the author reports also the odds ratio, to signify the effect size. Kappa (k) statistic was used to determine agreement between FSW and RP on self reported behavior, such as oral sex and condom

use. Agreement values are within the range of 0 -1, were poor agreement is indicated with values between 0 to 0.20, fair agreement between 0.21 to 0.40, moderate agreement between 0.41 to 0.60, good agreement 0.61-0.80, and very good agreement >0.80 (75). If there were not an equal number of respondents in each 2 x2 table, Pearson Chi-Correlation (r) will be used to report whether observed frequencies could have occurred beyond chance.

4.9 Risk, Ethical Considerations, Benefits, and Compensation

(Please refer to Annex 4.12)

4.10 Cross Sectional Study Limitations

Strengths

- i. **Study type:** the selection of study type design was appropriate to capture background characteristics of participants, as well as identify sexual behaviours practised within and outside of their FSW-RP relationship.
- ii. **Study type:** inexpensive and quick to capture relevant relationships between risk factors and HIV outcome.
- iii. **Triangulation of study findings:** both behavioural and biological information was collected from FSWs and RPs are enrolled in this study. Consequently, we were able to compare individual's self reported behaviour with partners, to see whether they support each other's reports, as well, as check whether biological findings support these reports (internal validity checks).

Weakness

- i. **Study Type:** Directionality between risk factors and HIV outcome: a major limitation of cross sectional study designs is that while they are able to highlight relationships between risk factors and HIV outcome, they are not useful in distinguishing the sequence of events, or whether exposure to the risk factor caused HIV outcome. In order to establish directionality to determine whether a risk factor preceeded, occurred at the same time, or occurred after HIV-1 seropositivity, a longitudinal prospective cohort study would need to be conducted. However, the HIV research settings, cohorts must offer prevention strategies for known risk factors that are known to precede HIV infection, which would result in fewer numbers of new cases. Consequently, more participants would need to be enrolled, increasing the cost of conducting such a study.

Weakness

- ii. **Study Type:** Causality – cross sectional studies can provide supporting evidence for a hypothesis by reporting an odds ratio, whereby those who have exposure to the risk factor and the disease outcome are compared to those without either, for instance, those who report not using condom and being HIV-1 positive could be compared to those who use condoms and being HIV-1 negative, to demonstrate when the risk factor is present, the outcome of disease is more likely. While useful to provide supporting evidence for a hypothesis, again, this does not support causality, since there are several confounders, namely time, change in behaviour related to the disease outcome, and other unknown factors. In order to indicate directionality and causality, the next step would be a longitudinal prospective cohort study. If directionality were established from a longitudinal study, an intervention could be designed to control for

potential confounders and selection biases by conducting a randomized control trial. However, as previously mentioned, it would be unethical to test whether the absence of condoms in one group resulted in an increase in HIV incidence compared to a control group where condom use is nearly perfect. As such, for this study's intentions, the selection of the study type is adequate to fulfil its' purpose, yet, to strengthen arguments of a particular risk factor associated with an outcome, another type of study design would be necessary, such as a longitudinal prospective cohort.

- iii. **Sampling and Recruitment: Under-coverage biases** – FSWs who enrolled in this study might have already been coming into the clinic to be resurveyed, live nearby to the clinic itself, or have fewer clients – allowing them to have more time to enroll. This study did not collect information regarding the proximity of FSWs to the clinic. However, we did collect information about number of sexual partners in the last week. When we compared those FSWs enrolled with RPs with FSWs enrolled without RPs, we found no significant difference in number of partners. Please refer to Annex 4.11 Selection Bias for more information. It is quite possible that our sample was one of convenience, but without more background information it is difficult to suggest in which direction this would influence our study's findings.
- iv. **Sampling and Recruitment: Voluntary Bias** - Another form of systematic bias is that it was limited to individuals who volunteered to be part of this study. Since there is no comparison group for RPs who did not enroll, the author will restrict the discussion of voluntary bias to comparisons of FSWs who enroll with their RPs to those who enrolled without their RPs. As discussed in Chapter 5, Table 5.1, the author reports whether FSWs with RPs differed from FSWs without RPs in terms of known socio-demographic factors, which are known to be associated with HIV status. The only differences we found were FSWs who enrolled with their RP, were older and charged less per sex act, and more likely to have disclosed their occupation as an FSW to their RP. While disclosure of FSWs occupation to their RP, could bias our study towards RP who are more aware of their HIV risk, therefore, more likely to present themselves to our study. Comparatively, older age could influence our study's HIV estimates, because there is a greater likelihood that the older an FSW is, and also the longer she has been practicing prostitution, the more likely she is to be exposed to and be infected with HIV.

Weakness

- v. **Sampling and Recruitment: Non-Response Bias** – since we requested FSWs to help recruit their RPs, it is quite possible FSWs' who enrolled with their RPs reported differences in their relationship their regular partner, which could influence whether or not RPs would enroll in this study. Under voluntary biases, FSWs who have disclosed to their RPs their occupation as an FSW may also belong to more a different FSW-RP relationship. Other differences between FSWs enrolled with their RPs and those enrolled without were detected in the duration of FSWs' relationship with their RPs and how FSWs defined their relationships. FSWs who enrolled in the study with their RP reported longer relationships, and more frequently defined RPs as a husband. For more information, please consult Annex 4.11 Selection Biases. Overall, what this means is that the study may have excluded men who FSWs considered more as casual relationships.

Consequently, this selection bias could influence our study's findings on FSW-RP condom use, such that FSW and their RPs are less likely to use condoms. Therefore, RPs are more likely to be exposed to HIV, and if they have other concurrent partners whom they infrequently use condoms, we may overestimate RPs potential as a bridging population.

- vi. **Non-Randomized Sampling Method:** Random sampling method is preferred because it reduces the chance that voluntary and undercoverage biases may play on a study's findings. However, random sampling requires adequate knowledge of background characteristics and risk factors, as well as an accurate estimate of population size and HIV prevalence. Due to the illegal nature of sex work in Kenya, there are several barriers to being able to accurately quantify the population of FSWs, and in turn, quantify the number of RPs. Therefore, random sampling was not a feasible option for this study.
- vii. **Measurement Error:** social desirability bias may influence impact how both respondents answer survey questions on sexual behavior, and as a consequence, make it difficult to triangulate and internally validate an individual's self reported sexual behavior with their partners. As such, social desirability bias was analysed in the section on sexual behavior within FSW-RP relationships. We expect that social desirability bias will manifest in under reporting of sexual behavior by women and over reporting of sexual behavior by men will over report sexual behavior to clinic staff.

Summary of Methodological Limitations

This cross sectional study is limited by its inability to distinguish between known risk factors and HIV outcome. This study is also unable to support causality of risk factors and disease outcome. Based on sampling and recruitment strategies, this study is limited by its chain sampling method, whereby FSWs recruit their RPs into the study, and this introduced particular selection biases, such greater numbers FSW-RP couples who are in more stable, long term relationships, and relationships in which the FSW has disclosed her occupational status to her RP. The small sample size obtained from a non-randomized sampling method is another limitation that weakens the study's external validity. With such a small sample population it is hard to draw broader conclusions or make larger generalizations about FSW and their RPs within Kenya or Africa. There is a large potential for non-response bias, especially due to the study's small sample size, which ultimately impacts the study's internal validity. Lastly, there is a tendency for social desirability bias in participants' responses, especially topic-sensitive subjects such as sex.

Summary of Chapter 4:

This chapter provided a detailed overview of the cross sectional study design, procedures, and limitations. In the following chapter, the author presents and discusses this pilot projects findings.

Chapter 5: Results and Discussion

In the first part of this chapter, the author presents study findings, and in the second part, discusses these findings within the context of what is known about FSWs and their RPs.

Results

Recruitment

The data collection period for FSWs began on November 1, 2005 and ended on December 14, 2005. Over a period of 32 working days, 68 FSWs were enrolled in this study, of which 34 had regular partners. The data collection for FSWs' RPs began on September 26, 2005 and ended on December 19, 2005. Over a period of 61 working days, 34 RPs were enrolled in this study.

FSWs who enrolled in our study with their RP, tended to be older (39.82 vs 35.82 mean years; $p=0.033$), in more long term relationships (78.7 mean months vs. 41.2 mean months; $p=0.008$), charge significantly less per sexual act (91.Ksh vs 219.4 Ksh; $p=0.010$), and have disclosed their occupation as a sex worker to their RP ($p=0.003$; Odds Ratio= 3.06) (Table 5.1). While for education, marital status, motivation to enroll in study, still practicing as a sex worker, number of sex partners in the previous week, and reported condom use, we found no significant difference between FSWs with and without RPs (not shown).

Table 5.1 Differences in FSWs whose RPs enrolled vs. FSWs whose RPs did not

Socio-Demographics	FSW with RPs	FSWs without RPs	P	Sig	OR
Age (yrs)	39.82 mean	35.82 mean	0.033	Sig	
Education Level			0.086	NS	
Lower Primary School (1-3) and below	11	5			
Upper Primary School (4-8) and above	23	29			
Prostitution Background			P	Sig	
Duration of Prostitution in months	128.6 mean	109.2 mean	0.347	NS	
Charge per sexual act (Ksh)	91.5	219.4	0.010		
Duration of relationship in months	78.7	41.2	0.008	Sig	
FSW disclose RP that she is an FSW			0.033	Sig	3.06
Yes	26	17			
No	8	16			

Socio-Demographic Characteristics

Since this study was primarily interested in describing background characteristics and sexual behaviour within and outside of FSW-RP relationships, we restricted our descriptions to FSW-RP pairs. In Table 5.2, we present socio-demographics characteristics of RPs enrolled, and in Table 5.3, FSWs enrolled in this study.

The majority of FSWs' RPs were above 41 years old, of Kenyan nationality, and were married (of these, 21% were polygamous marriages). Education level varied from lower primary (5.9%) to upper primary (55.9%) and high school (38.2%). Of all those employed, the primary occupation reported by RPs was businessman (56.3%), followed by manual worker (25%), and driver (9.4%). Most RPs reported monthly earnings of 10,000 Ksh or less (Table 5.2).

Compared to their RPs, FSWs were slightly younger. Fifty percent of FSWs enrolled were 39 years old or younger. The majority were of Kenyan nationality, and attained a upper primary school level education or lower. Forty-four percent were never married (of these, 5.9 % had a live in partner), 29.4 % were married, and 26.5 % were divorced, separated, or widowed. Our study sample included a small number of FSWs who currently were not practising sex work (8/34; 23.5 %).

Sexual Behaviour within FSW-RP relationship

FSW Definition of RP

Of the 61.8% of FSWs who reported that their RP was like a husband (21/34), only 29.4% were married to their RP (10/34). Other FSWs defined their RP as a boyfriend or live in partner (12/34), and only 1 FSW reports their RP as being defined by having a child with him. The mean duration of the relationship in months was 78.7 (2-288 months), or translated into 6.6 years (0.2 – 24 years). The majority of women reported that their RP has started off as a casual client or regular paying client (28/34), and only 2 reported that their RPs currently pays them for sex. While the majority of FSWs reported that their RP is like a husband, more than 50 percent of them report their RP is married to someone else. FSWs were allowed to select multiple categories with respect to how their RPs supported them. The majority reported that RPs supported them with food (28/34) and rent (26/34), followed by a monthly allowance (16/34), and lastly school fees (6/34) (Annex 5.1).

Sexual Behaviours Practised within FSW-RP relationships

Apart from vaginal sex, 2/34 FSWs reported performing oral sex on their RP, 7/34 reported sex during menses (20.6%), and none reported anal sex (Table 5.3). Meanwhile, 6/33 RPs reported receiving oral sex from their FSW partner, 6/34 reported engaging in sex during menses (17.6%), and 1/34 RP reported anal sex. FSW-RPs reported discordant sexual practises in all 3 categories: 4/34 for oral sex, 1/34 for sex during menses, and 1/34 for oral sex. Concordant sexual behaviour reporting was found only for oral sex, corresponding to a moderate agreement level ($k=0.45$, $p=0.001$). However, the significance of this relationship is doubtful since there is not a comparison group in one of the 2x2 cells (Table 5.5).

Table 5.2 Socio-demographic Characteristics of RPs and FSWs

Characteristics	Regular Partner				FSW			
	N	%	Mean	Range	N	%	Mean	Range
Age (yrs)	34		42.6	(27-69)	34		40.12	(24-58)
RP: 41 yrs old and below	16	47.1						
RP: 42 yrs old and above	18	52.9						
FSW: 39 yrs old and below					17	50		
FSW: 40 yrs old and above					17	50		
Nationality	34				34			
Kenyan	27	79.4			20	58.8		
Tanzanian	5	14.7			12	35.3		
Ugandan	1	2.9			2	5.9		
Other	1	2.9						
Education Level	34				34			
Lower Primary (1-3) or lower	2	6			11	32		
Upper Primary (4-8) or higher	32	94			23	68		
Marital Status	34				34			
Never married, live alone or with partner	2	5.9			15	44.1		
Married	24	70.6			10	29.4		
Widowed/Divorced/ Separated	5	14.7			9	26.5		
RP: Polygamous Marriage	24							
Yes	5	14.7						
No	19	79.2						
RP: FSW is wife/live-in partner	24							
Yes	15	62.5						
No	9	37.5						
FSW: RP is husband					10			
Yes					10	100		
No					0			
RP: Occupation	32							
Driver	3	8.8						
Business man	18	52.9						
Manual Worker	8	23.5						
Other	3	8.8						
Earnings per month	34				26			
10,000 Ksh or less	29	85.3			25	96.2		
Greater than 10,000	5	14.7			1	3.8		

Table 5.3 Sexual Behaviours Practised with FSW-RP relationships

Characteristics	RP		FSW	
	N	%	N	%
Sexual Practices				
Oral Sex	33		34	
Yes	6	17.6	2	5.9
No	27	79.6	32	94.1
Sex During Menses	34		34	
Yes	6	17.6	7	20.6
No	28	82.4	27	79.4
Anal Sex	34		34	
Yes	1	2.9	0	
No	33	97.1	34	100

Sexual Behaviour within FSW-RP relationship

Condom use

Both FSWs (19/34; 55.9%) and their RPs (22/34; 64.7%) frequently reported never using condoms. Comparatively, only some FSWs (10/34; 29.4%) and few RPs (5/23; 15.6%) reported consistently using condoms. Moderate agreement, suggested by Kappa values, was found both for couples always ($k=0.43$; $p=0.013$) and never reporting condom use ($k=0.42$; $p=0.007$). These findings are supported by odds ratios. FSWs who reported never using condoms in their relationship were 7.11 times more likely to have their RPs also report not using condoms; similarly, FSWs who reported always using condoms in their relationship were 15.33 times more likely to have their RP report the same (Table 5.5). Discordance in reporting of sexual behaviour is most frequent with FSWs who report always using condoms (FSWs 10/34 vs RPs 5/34), and less frequently with those who report never using condoms (FSWs 19/34 vs. RPs 22/34) (Annex 5.2, Table 5.4). Overall, 14 of FSW-RP pairs report different or discordant levels of condom use (Annex 5.2).

Condom Negotiation and Reasons not to use condoms

To better understand the contextual background behind condom use, we asked questions on condom negotiation, such as whether FSWs asked their RPs to wear a condom, and whether RPs complied. We also asked open-ended questions to elicit reasons why respondents did not use condoms.

Twenty five FSWs reported that they asked their RP to wear a condom (25/33; 75.8%). In 55.9% of FSW-RP relationships, RPs reported that they were asked by their FSW partner to wear a condom. Of the 17 male respondents who were asked to wear a condom, only 9 complied. When RPs were asked in general, why they decided not to wear condoms, the most frequent answer related to trust, followed by the FSW being their wife, length of their relationship, dislike of condoms, and desire for children. In

comparison, 25/33 FSWs reported asking their RPs to wear a condom, and that 14/25 RPs wore one. When FSWs were asked what factors influenced their and their RPs not to use condoms, the most frequent responses were trust, length of relationship, threat of violence, desire for children, and dislike of condoms. There was a high level of disagreement both for condom negotiation questions, as well as reasons why condoms were not used in FSW-RP relationships (Table 5.4).

Sexual Behaviour within FSW-RP relationship

Self and Partner's Perception of HIV risk

Poor acceptability of condom use within a partnership may be related to perception of one's own risk and one's partner's risk. To capture this dimension, we asked about the extent to which FSWs and RPs agreed on various relationship characteristics, starting off with demographic and basic relationship information, and progressing to whether FSWs disclosed their occupation and HIV status to their RPs, and whether RPs disclosed their HIV status to their FSW partners.

Perception of Partner's HIV Risk

FSWs and RPs generally agreed on the duration of FSW-RP relationship (FSWs report a mean of 6.6 years, RPs report a mean of 8.2 years, $r=0.794$, $p=0.000$). However, there is little agreement of any other demographic characteristics, such as whether FSW and RP both report being married to each other, awareness of RP being married to someone else, and whether FSWs and RPs lived together (Annex 5.2).

Disclosure of and Misperception of partner's HIV/STI Risk Factors

Disclosure of FSW Occupation to RP

Less than 50 % of RPs said they had paid for sex in general (16/33; 47.1%), whereas over 80 % of FSWs reported their RP had at one time paid them for sex (28/34; 82.4%). Despite FSWs reporting that their RP paid them for sex, 5/28 FSWs still did not disclose their occupation. The relationship between disclosure of FSWs' occupation and receiving payment for sex from RP was found not to be statistically significant. When FSWs were probed for an explanation of why they did not disclose their occupation to their RP, they responded with statements like "it is my private affairs", or felt implicitly that he might already know, since their RP was once a regular customer or had heard this from others. A few FSWs feared being beaten or left by their RPs. The majority of FSWs who did not disclose their occupation, conveyed that their RP thought they did another job. In comparison, only 6/34 RPs reported their partner's occupation as a FSW. RPs' reporting of their partner's occupation was not associated with FSW reported being paid for sex by her RP, nor was it associated with RPs' self report of ever paying for sex (not shown).

Table 5.4. Self reported condom use by FSWs and their RPs

Characteristics	RP		FSW		Discordant Ans	Test		
	N	%	N	%		K	P	OR
Condom use	32		34			K	P	OR
Never	22	64.7	19	55.9	3	0.426	0.013	7.11
Ever	12	35.3	15	44.1	3			
Always Condom use	34		34			K	p	OR
Yes	5	14.7	10	29.4	5	0.420	0.007	15.33
No	29	85.3	24	70.6	5			
Condom Negotiation								
FSW asks RP to wear condom	34		33			K	p	OR
Yes	19	55.9	25	75.8	6	-0.056	0.746	
No	15	44.1	8	24.2	7			
If FSW asks RP to wear condom, does RP wear condom	17		25			K	p	OR
Yes	9	52.1	14	56	5	0.847	0.002	N/A
No	8	47.1	11	44	3			
Reasons not to use condoms								
Trust	24		34			K	p	OR
Yes	13	54.2	19	55.9	-0.151	0.459	N/A	
No	11	45.8	15	44.1				
Length of relationship	23		34			K	p	OR
Yes	2	8.7	5	14.7	-0.211	0.311	N/A	
No	21	91.3	29	85.3				
Prefers not to use (FSW or RP)	23		34			K	p	OR
Yes	2	8.7	1	2.9	0.66	0.752	N/A	
No	21	91.3	33	97.1				
Desire to have children	23		34			K	p	OR
Yes	2	8.7	2	5.9	0.066	0.752	N/A	
No	21	91.3	32	94.1				
RP Specific								
Wife	23							
Yes	7	30.4						
No	16	69.6						
FSW specific								
Threat of violence			34					
Yes			5	14.7				
No			29	85.3				

Table 5.5: He said, She said – Reporting Concordance within FSW-RP relationship

Concordance of Condom use and factors influencing condom use within FSW-RP couples							
NEVER CONDOM	RP: Never Condom use			K	p	Sig	OR
FSW: Never	Never	Ever	FSW Tot	0.426	0.013	Sig	7.11
Never	16	3	19				
Ever	6	8	14				
RP Tot	22	11	33				
ALWAYS USE	RP: Always			K	p	Sig	OR
FSW: Always	Always	<Always	FSW Tot	0.420	0.007	Sig	15.33
Always (100%)	4	6	10				
<Always	1	23	24				
RP Tot	5	29	34				
CONDOM NEGOTIATION WITHIN FSW-RP RELATIONSHIP							
FSWs ASK RP TO WEAR CONDOM	RP: FSW asks			K	p	Sig	OR
FSW: FSW asks	Yes	No	FSW Tot	(-).056	0.746	NS	
Yes	14	11	25				
No	5	3	8				
RP Tot	19	14	33				
RP WEARS CONDOM	RP: RP wears condom			K	p	Sig	OR
FSW: RP wears condom	Yes	No	FSW Tot	0.847	0.002	Sig	N/A
Yes	6	1	7				
No	0	6	6				
RP Tot	6	7	13				
Concordance of Sexual Behaviors Practiced within FSW-RP							
ORAL SEX	RP: Ever oral sex			K	p	Sig	OR
FSW: Ever oral sex	Yes	No	FSW Tot	0.450	0.002	Sig	Could not compute (CS)
Yes	2	0	2				
No	4	27	31				
RP Tot	6	27	33				
SEX DURING MENSES	RP: Ever sex during menses			K	p	Sig	OR
FSW: Ever sex during menses	Yes	No	FSW Tot	-.045	0.793	NS	0.733
Yes	1	6	7				
No	5	22	27				
RP Tot	6	28	34				
ANAL SEX	RP: Ever anal sex			K	p	Sig	OR
FSW: Ever anal sex	Yes	No	FSW Tot	CS	CS	NS	CS
Yes	0	33	33				
No	1	0	1				
RP Tot	1	33	34				

RPs' Perception of HIV Risk

Only RPs were asked whether they perceived themselves to be at no, low, or high risk for HIV. Most reported being at no or low risk for HIV (28/33). When asked to give a reason why they believed they are at low risk, several men state they were faithful to their FSW partner, who may also be one of their wives. Other reasons were that they trust their FSW partner, or that they did not have sex with many other women, and if they did, they used condoms with their other partners. A few men reported that they were at low risk because they were not sick all the time, or because they chose partners whom they think do not have HIV.

Of the remaining 5 RPs who stated they were at high risk, one RP said it was because of his partner's occupation. Two RPs thought they were at increased risk because they were sick all the time. While another one thought his risk of HIV was high because his wife had herpes zoster on her face. The last RP's reason was that his blood was stronger than his wife's. Yet while these men are aware of their increased HIV risk, 2 report never using condoms, and one reports always using condoms. Of these men who perceive themselves as high risk, 2 are seropositive.

FSW and RP Awareness and Disclosure of HIV status to their partner

Only 2/34 FSWs (5.9%) reported not knowing their HIV status, compared with 24/34 RPs (70.6%). Of those aware of their HIV status, 13/34 FSWs responded that they were HIV positive, while 19/34 FSWs and 10/34 RPs said they were HIV negative. According to FSWs, 22 had disclosed their HIV status to their RP, yet only 18 RPs reported that their FSWs disclosed their HIV status to them. When RPs were asked what status their partner was, even those who did not report their FSW disclosing her HIV status to them, still reported they were HIV negative (18/20). All 10 RPs who were aware of their HIV results reported disclosing their HIV status as seronegative to their FSW partner. Oddly, while only 10 RPs claim to have disclosed their status to their FSW partner, 16 FSWs reported that their RP disclosed their results, of which 3 FSWs reported their RP to be HIV positive.

When asked about motivation to participate in this study, 8/34 FSWs (23.5%) and 19/34 RPs (70.4%) reported wanting to know their HIV status (Table 5.6). For both FSWs and their RPs, self-reported HIV status was not associated with motivation to join study.

Discordant Answers on self disclosed HIV risk factors

As summarized in Table 5.6, FSWs and their RPs were found to have little agreement in their responses on HIV/STI risk factors, and their perception of their partner's HIV/STI risk factors.

These discordant responses could be indicative of underestimation or overestimation of self and partner's HIV risk. For example, of the 18 RPs who reported that their FSW partner disclosed their status, and this status was

HIV negative, in 5 FSW-RP pairs, 5 FSWs claimed to have disclosed their their HIV status, which was seropositive. This discrepancy indicates that at least in 5 FSW-RP partnerships, 5 RPs may have underestimated their FSWs HIV risk. Comparatively, 3 FSWs reported that their RP had disclosed a positive HIV status, whereas 0 RPs admitted to doing so. Agreement was low ($k=0.34$) for FSW's report of disclosure of HIV status by their partner, which was the only interpartner concordance to be found significant ($p=0.05$).

Condom use Correlates

As seen in Table 5.7, for both FSWs and RPs, trust was significantly associated with not using condoms (FSWs $p=0.00018$; RPs $p=0.022$). For FSWs, those who reported never using condoms in their relationship were 21.3 times more likely to report that trust was a significant decision making factor. For RPs, the relationship between trust and reporting never using condoms was weaker, with an odds ratio of 0.089. However, RPs who were married or lived with their FSW partner were significantly associated with never using condoms ($p=0.016$), such that those who reported never using condoms were 12 times more likely to report being married or living with to their FSW partner.

Other reasons RPs reported not for lack of condom use, such as long duration of relationship, and preference not to use condoms were also associated with never using condoms ($p=0.035$, $p=0.035$). However, after an independent t-test, based on RPs' reports of duration of relationship, never use of condoms and length of partnership were found not to be associated. Other reasons not to use condoms such as desire for a child, threat of violence, and perception of FSW as wife, were found not to be statistically significant in either FSW or RP reported condom use, nor were potential confounder's such as age and education level. In addition, perception of HIV risk factors (not shown in table below) such as disclosure of FSW status, payment for sex, disclosure of HIV status, and RP perception of self risk were not found to be statistically significant with ever use of condoms.

Table 5. 6 Self Perception and Partner Perception of HIV risk

Variables	FSW Reports		RP Reports		Discordant Answers	Test	
	N	%	N	%		N	K
RP ever paid for sex	34		33				
Yes	28	82.4	16	47.1	12	0.077	0.570
No	6	17.6	15	44.1			
FSW discloses her occupation	34		34			K	P
Yes	26	76.5	6	17.6	20	0.036	0.662
No	8	23.5	28	82.4			
FSW disclose her HIV status to RP	34		27			K	p
Yes	22	64.7	18	66.7	4	0.191	0.159
No	12	35.3	9	33.3	3		
FSWs HIV Status	34		20			K	p
HIV positive	13	38.2	2	10	11	0.336	0.050
HIV negative	19	55.9	18	90	1		
Do not know	2	5.9					
RP had HIV test	34		34			K	p
Yes	21	61.8	11	32.4	11	0.270	0.159
No	11	23.4	23	67.6	12		
Do not know	2	5.9					
RP disclose HIV status	21		10			K	p
Yes	16	76.2	10	100	6	N/A	N/A
No	5	23.8					
RP HIV status	16		10			K	P
HIV positive	3	18.8			3	0.375	0.055
HIV negative	13	81.3	10	29.4	3		
Do not know			24	70.6			
RP's perception of HIV risk			33				
No Risk			12	35.3			
Low Risk			16	47.1			
High Risk			5	14.7			
FSWs' Motivation	34						
Know her status	8	23.5					
Know RP's status	17.6	17.6					
Know both status	8.8	8.8					
Counseling, Treatment, or receive Advice	50	50					
RPs' Motivation			27				
Know his status			19	70.4			
Treatment			5	18.5			
Interested in research			4	11.1			

Table 5.7 Correlates of Condom Use within FSW-RP relationship

	FSW: Condom use				RP Condom use			
	Never	Ever	P value	OR	Never	Ever	P	OR
Mean Age	40.21	40	0.932		43.77	40.45	0.412	
Marital Status			0.350				0.016	12
Married/live with partner	8	4			21	7		
Other	11	11			1	4		
Duration of relationship (mean mos)	94	59.3	0.174		105	91	0.699	
FSW asks RP to wear condom			0.604				0.006	0.069
Yes	13	12			9	10		
No	5	3			13	1		
RP wears condoms			0.008	0.09			0.007	0.041
Yes	4	10			2	7		
No	9	2			7	1		
Trust			0.00018	21.3			0.022	N/A
Yes	16	3			12	0		
No	3	12			7	4		
Longtime together			0.841				0.035	0.05
Yes	3	2			1	1		
No	16	13			19	1		
RP prefers not to use							0.035	0.05
Yes					1	1		
No					19	1		

Sexual Behavior Outside of FSW-RP Relationship

FSW: Sexual Behavior Outside of FSW-RP Relationship

FSWs: Sex Work Characteristics

Annex 5.4 presents a table of background characteristics of FSWs. The majority of FSWs were above 35 years old (Mean age=20.12, range 24-58), were of Kenyan nationality, and were not married or living with a partner. Mean age of sexual debut was 16.9 years (range 13-23 years old), mean duration of prostitution was 9.8 years (range less than 1 to 21 years), and mean number of sexual partners in the past week was 21 (range 1-100). On average, FSWs charged 93.5 Ksh⁵ (range 45-300), and earned less than 5,000 Ksh⁶ per month. They sought clients at home (20/26), bar and restaurant (21/26), and nightclub (23/26). Only 2 FSWs reported travelling to practise sex work. In total, 5 out of the 26 FSWs reported having other partners with whom they did not use condoms. These other partners were not captured by the category of casual or regular client, or regular partner. All together, 5 FSWs reported an additional 9 partners with whom they did not use condom. In terms of sexual practises, oral sex was practised by 1 FSW (1/26), sex during menses by 9 FSWs (9/26), and anal sex by 2 FSWs

⁵ 93.5 Ksh= 1.34 US D

⁶ 5,000 Ksh = 71.4 Ksh

(2/26). None reported injection drug use, and 17 out of 26 reported ever drinking.

FSW: Condom use with Partner Type

FSWs reported the highest use of condoms with their casual clients (CC), followed by regular clients (RC), and then by RPs. Condom use was found to be gradient dependent on partner type, with FSWs reporting always using condoms (100 % condom use) with their CC, almost always (74-99% condom use) with their RCs (CC Always vs. RC Almost always; p=0.047), and sometimes with their RPs (CC Always vs. RP Sometimes; p= 0.000; RC Almost Always vs. RP Sometimes; p=0.000) (Table 5.8). This is best captured in difference in condom use between RCs and RPs, whereby FSWs are 20.81 times more likely to report always using condoms with their RCs than with their RPs. FSWs did not report any significant differences in sexual practises, such as oral sex, sex during menses, or anal sex, with their CCs, RCs, and RPs (Annex 5.5) .

Table 5.8: FSWs Condom use outside of FSW-RP relationship

Condom use: Never		Never Condom use			
Different Partner Types	N	Never	Ever	Chi-Sq p-value	
Casual Client (CC)	26	0	26	0.000	
Regular Client (RC)	26	3	23		
Regular Partner (RP)	26	15	11		
Condom Use: Always		Always Condom use			
Different Partner Types	N	Always	<Always	Chi-Sq p-value	
Casual Client (CC)	26	26	0	0.000	
Regular Client (RC)	26	23	3		
Regular Partner (RP)	26	7	19		
Always Condoms	N	Always	<Always	Chi-Sq p-value	OR
CC	26	26	0	0.074	N/A
RC	26	23	3	0.00000	N/A
CC	26	26	0		
RP	26	7	19		
RC	26	23	3	0.00001	20.81
RP	26	7	19		
Paired T-test					
Condom use Scale	N	Mean	Sig (2-tail)		
CC Condom use	26	6	0.047		
RC Condom use	26	5.31			
CC Condom use	26	6	0.000		
RP Condom Use	26	2.81			
RC Condom use	26	5.31	0.000		
RP Condom Use	26	2.81			

RP: Sexual Behavior Outside of FSW-RP Relationship

RP: Sexual History and General Concurrency Characteristics

Annex 5.6 presents a table of RPs’ background sexual history and general concurrency characteristics. The majority of RPs were than older than 15 years when they had their sexual debut (25/34), and almost 50 % of them had more than 10 lifetime partners (15/34). Five of the 24 married RPs are in polygamous marriages. Another 6 of the 24 married RPs did not live with their wives. (Table 5.9). Sixteen RPs said they had ever paid for sex (16/31), and only 1 reported presently paid for sex (1/16). Two RPs reported ever having sex with a man (2/34). In terms of other risk factors, 25 RPs were ever alcohol drinkers (25/34), 2 had ever used drugs (2/34), none were ever injection drug users, and none reported having ever taken antibiotics to prevent STDs.

Table 5.9: RP Sexual Network Characteristics

Characteristics of RP Sexual Networks		N	%		
Ever Paid for Sex		31			
Yes		16	51.6		
No		15	48.4		
Currently Paying for Sex		16			
Yes		1	6.5		
No		15	93.5		
Ever had sex with men		34			
Yes		2	5.9		
No		32	94.1		
Currently concurrent		27		Mean	Range
Yes		21	77.8	5.5	(2-21)
No		6	22.2		
Number of concurrent partners		23			
> 5		18	78.3		
5 or more <		5	21.7		
Partner Type		N	%	Mean	Range
Wife/Wives		25		1.2	(1-3)
Yes		13	52.0		
No		12	35.3		
FSW (his wife or live in partner)		24		1	(0-1)
Yes		23	95.8		
No		2.9	4.2		
Other regular girlfriends		25		2.4	(1-8)
Yes		10	40		
No		15	60		
Other occasional partners		25		6.5	(1-20)
Yes		8	32		
No		17	68		
Other FSWs		25		3	(1-10)
Yes		3	12		
No		22	88		

RP: Concurrency and Different Partner Types

Almost 80 percent of RPs reported having ever had more than one sexual relationship at the same time (27/34). Over 75 percent of these RPs (21/26) reported having had concurrent partners including their FSW partner. The mean number of concurrent partners including FSW partner was 5.5 (range 2-21), with the majority reporting under 5 concurrent partners. The different concurrent partner types were wives, FSWs who were also either wives or live in partners, other regular girlfriends, occasional partners, and other FSWs. Of those reporting these different concurrent partner types, the mean number of wives was 1.2 (range 1-3); the mean number of FSW wives or live in partners was 1 (range 0-1); the mean number of regular girlfriends was 2.4 (range 1-8); the mean number of occasional partners 6.5 (range 1-20); and the mean number of other FSWs was 3 (1-10). The most commonly cited concurrent partner, after FSW partner was wife (13/25; 52 %), followed by regular girlfriends (10/25; 40%), occasional partners (8/25; 32%); and other FSWs (3/25; 12%).

RP: Different Sexual Networks

Of the 34 RPs, 11 reported that their FSW was their only partner. From the point of view as RPs being a bridging population to the general population, we considered these 11 RPs whose only partner is an FSWs, to be closed sexual network. What this means is that there is limited potential for RPs to be a bridging population. This does not preclude FSWs capability to be a bridging population. Monogamous RPs, whose only partner is an FSW, could be considered to belong to closed sexual network. However, due to inconsistent condom use, RPs are at still at risk for STI and HIV acquisition from the FSW partner.

However, the 23 RPs who did report having concurrent partner, were considered to belong to an open network, and based on their concurrent partners, they were a potential bridging population for HIV and other STIs. These RPs reported an total of 128 concurrent partners, whose distribution is as follows, 15 wives, 23 FSWs who were wives or live in partners, 24 regular girlfriends, 51 occasional partners, and 15 other FSWs (Table 5.10 and Table 5.11). The most frequently reported type of sexual network was having both a wife/wives and a FSW wife or live in partner, followed by FSW wife or live in partner and other regular girlfriends (Table 5.10). Based on reported condom use with their concurrent partners, the majority of concurrent RPs belong to open sexual networks. Whereby, their reported poor condom use with most or all of their partners, places them as the potential index partner for STI and HIV transmission to the rest of partners (Table 5.10).

Table 5.10 RP Sexual Networks

Network type	RPs		Consistent Condom Use		Overall Network
	N	%	CCU	<CCU	
No bridge	11				Closed Network STI from: FSW to RP
Only FSW partner	11		8	11	
Bridge	23	%			Open: RP to Concurrent partners
Wife/Wives+ FSW partner	8	34.8	8	2	
Wife+ FSW partner+ RG+OP	1	4.3	1		
Wife+ FSW partner + RG+ OP+ oFSW	2	8.7	2		
FSW partner+ RG	4	17.4	3	1	
FSW partner + RG+OP	1	4.3	1		
FSW partner+RG+ OP+ oFSW	2	8.7	1	1	
FSW part+oFSW	1	4.3	1		
FSW+OP	2	8.7	1	1	
Wife + FSW + OP + oFSW	1	4.3	1		
Wife + FSW+ OP	1	4.3	1		

RP: Condom use with different concurrent partners

RPs reported highest use of condoms with their occasional partners, followed by other FSWs, their regular girlfriends, FSWs who were their wives or live in partners, and lastly, their wives. Overall, significant differences were found in relating RPs never use of condoms and partner type. When compared to never condom use with their FSW wife or live in partner, regular girlfriend (s), occasional partners, and other FSWs, RPs were most likely to report never using condoms with their wives (FSW partner vs. wife $p=0.01$, regular girlfriend vs. wife $p=0.004$, occasional partner vs. wife $p<0.000001$, other FSWs vs wife $p=0.05$). Other notable differences in RP never use of condoms is seen with FSW wife or live partner vs. occasional partner, and regular girlfriend vs. occasional partner. RPs were 10.09 times more likely to report never using condoms with their FSW partner than with their occasional partner ($p=0.000002$), and were 7.6 times more likely to never use condoms with their regular girlfriend than with their occasional partner ($p=0.00014$). Reported use of condoms with FSW partner and regular girlfriend compared to occasional partner condom use, suggests that there is a gradient of condom use, whereby RPs are less likely to report using condoms with more steady, regular partners (Table 5.11).

Table 5.11: RPs condom use with their different partner types.

	RP	N of partner type		Never Condom Use		
Condom use: Never	N	RP reports (N)	Valid data(N)	Never	Ever	Chi-Sq p-value
Different Partner Types						
Wife/Wives	13	15	15	15	0	0.000
FSW Wife/live in partner	23	23	23	15	8	
RG	10	24	24	14	10	
OP	8	51	51	8	43	
oFSWs	5	15	13	10	3	
Never Condoms	N	Never	Ever	Chi-Sq p-value	OR	
Wife/Wives	15	15	0	0.01	N/A	
FSW Wife/live in partner	23	15	8			
Wife/Wives	15	15	0	0.004	N/A	
RGs	24	14	10			
Wife/Wives	15	15	0	0.00000	N/A	
OP	51	8	43			
Wife/Wives	15	15	0	0.05	N/A	
oFSWs	13	10	3			
FSW Wife/live in partner	23	15	8	0.623	1.34	
RGs	26	14	10			
FSW Wife/live in partner	23	15	8	0.00002	10.09	
OP	51	8	43			
FSW Wife/live in partner	23	15	8	0.589	1.38	
oFSW	13	15	11			
RGs	24	14	10	0.00015	7.6	
OP	51	8	43			
OP	51	8	43	0.00014	0.14	
Other FSWs	13	15	11			

HIV and STI Prevalence and Correlates

As seen in Table 5.12, classical STIs, such as gonorrhoea, Chlamydia, and syphilis are infrequent in both FSWs and RPs. In FSWs, the most common STI found was HSV-2 (32/ 34; 94.1%), followed by HIV-1 (12/34; 35.3%), and gonorrhoea (1/34; 2.9%). Among RPs, 61.8 % were seropositive for HSV-2 and 26.5 % were seropositive for HIV-1. Only 1 RP was found to be positive for syphilis (1/34; 2.9%). HIV-1 seropositive RPs were 42 times more likely to have a seropositive FSW partner than to have a seronegative FSW partner ($p=0.00009$). Overall, 13 FSW-RP couples are living with HIV. Eight couples are seropositive concordant couples, 5 are serodiscordant couples, and 21 are seronegative concordant. Of the 5 FSW-RP pairs that are discordant, in 4 partnerships, the FSW is HIV positive, and in 1 partnership, the RP is seropositive.

Univariate Analysis

Only RP lifetime partners was found to be associated with FSW seropositivity, whereby FSWs were 7.2 times more likely to be seropositive if their RP had less than 10 lifetime partners compared to those whose RPs had greater than 10 life time partners ($p=0.017$). Other known HIV risk factors, such as age, education, average number of clients per week, income, reported condom use, and duration of RP relationship was not found to be associated with FSW seropositivity. While for RPs, seropositivity was associated with FSW never condom use ($p=0.018$) and always condom use ($p=0.004$). The relationship between RP seropositivity and FSW condom use was weakly associated ($OR=0.13$). In comparison, RP were more than 10.5 times as likely to be seropositive if FSWs reported always using condoms compared to those who did not (Table 5.13)

Table 5.12 : FSW-RP Descriptives and STI Correlates

	RP		FSW		P value	OR	
	N	%	N	%			
HIV-1	34		34		DESCRIPTIVES		
HIV+	9	26.5	12	35.3			
HIV-1	25	61.8	22	64.7			
Syphilis	34		34				
Syphilis +	1	2.9	0	0			
Syphilis -	33	97.1	34	100			
Chlamydia (CT)	32		34				
CT+	0	0	0	0			
CT-	32	100	34	100			
Gonorrhoea (GC)	32		34				
GC+	0	0	1	2.9			
GC-	32	100	33	97.1			
HSV-2	34		34				
HSV-2 +	21	61.8	32	94.1			
HSV-2 -	13	39.2	2	5.9			
FSW-RP Correlates	RP		FSW				
FSW STI	HIV+	HIV-	HIV+	HIV-			
FSW HSV-2							
HSV-2+			12	20		0.282	N/A
HSV-2-			0	2			
FSW GC							
GC+			1	0	0.453	N/A	
GC-			21	12			
RP HIV							
RP HIV+			8	1	0.00009	42	
RP HIV-			4	21			
RP STI							
FSW HIV							
FSW HIV+	8	4					
FSW HIV-	1	21			0.00009	42	
FSW HSV-2							
FSW HSV-2+	9	23			0.382	N/A	
FSW HSV-2-	0	2					
RP HSV-2							
HSV-2+	8	13					
HSV2-	1	12			0.051	7.38	

5.13 Individual HIV correlates

Sociodemographic Characteristics	Regular Partner				FSW			
	HIV+	HIV-	P	OR	HIV+	HIV-	P	OR
Age			0.336					
RP: 41 yrs old and below	3	13						
RP: 42 yrs old and above	6	12					0.473	
FSW: 39 yrs old and below					7	10		
FSW: 40 yrs old and above					5	12		
Marital Status			0.723				0.566	
Married or live in partner	8	21			5	7		
Other	1	4			7	15		
Education			0.382				0.928	
< and Lower Primary	0	2			4	7		
Upper Primary and <	9	23			8	15		
Income			0.146					
RP: 10,000 Ksh	9	20						
RP: >10,000 Ksh	0	5						
FSW: Earning per month							0.366	
<5,000 Ksh					6	14		
>5,000 Ksh					3	3		
Concurrency								
RP: Life time partners			0.123				0.017	7.2
>11 lifetime partners	7	12			10	9		
11 lifetime partners and <	2	13			2	13		
RP: Concurrent while with FSW			0.366				0.391	
Yes	5	18			7	16		
No	4	7			5	6		
RP: Ever Paid for Sex			0.166					
Yes	2	14						
No	5	10						
Condom Use								
FSW: Never			0.018	0.13	12	22	0.610	
Never	2	17			6	13		
Ever	7	8			6	9		
FSW: Always			0.004	10.5			0.247	
Always	6	4			5	5		
>Always	3	21			7	17		
RP: Never			0.407				1.00	
Never	5	17			8	14		
Ever	4	7			4	7		
RP: Always			0.723				0.635	
Always	1	4			1	4		
>Always	8	21			11	18		

5.14 RP: Potential Bridging Population

Marital Status		
Married or live in partner	29	85.3
Other	5	14.7
RP: Polygamous Marriage	24	
Yes	5	14.7
No	19	79.2
Self Perception of Risk		
No Risk	12	35.3
Low Risk	16	47.1
High Risk	5	14.7
RP HIV Status		
Do not know	24	70.6
HIV Negative	10	29.4
Concurrency		
N of Lifetime partners		
>11 lifetime partners	19	55.9
11 lifetime partners and <	15	44.1
Currently, concurrent?		
Yes	23	67.6
No	11	32.4
Condom use with FSW partner		
Never	15	65.2
Ever	8	34.8
Condom use with Wife		
Never	15	100
Ever	0	0
Condom use with RG		
Never	14	58.3
Ever	10	41.7
Condom use with OP		
Never	8	15.7
Ever	43	84.3
Condom use with oFSWs		
Never	10	76.9
Ever	3	23.1
STIs		
HIV -1	34	
HIV+	9	26.5
HIV-	25	61.8
Serodiscordant: FSW HIV+	34	
Yes	5	14.7
No	29	85.3
HSV-2	34	
HSV-2+	21	61.8
HSV-2-	13	39.2
Syphilis	34	
Syphilis +	1	2.9
Syphilis-	33	97.1

Discussion

Recruitment

Plenty has been written in the literature on the challenges of identifying and recruiting FSWs' RPs into a surveillance study (60, 70, 71). In some instances, the only common factor among RPs is that they have sex with FSWs (38). Apart from a few studies (36, 37, 39, 40, 42, 44), very little is known about FSW's RPs, from his perspective.

Quite possibly one of the primary merits of this study was the identification and recruitment of FSWs' RPs into this study, which was only possible through the collaboration with their FSW partners. FSWs acted both as outreach workers and key informants, disseminating study information to their RPs, and identifying and recruiting their RPs into the study, as well as providing working definitions of who is a RP and what are the sexual practices with them. Yet, these accomplishments are not without their own set of challenges. In particular, selection biases, such as non-responses and voluntary bias, which introduce systematic biases in our results, and have an impact on their generalisability.

Unfortunately, we did not collect information from non-respondent RPs directly. However, we did collect information on FSWs who enrolled in our study without their RPs, we used FSWs who enrolled in our study without their RPs as proxy indicators for potential non-respondent RPs, as well as introduce potential voluntary biases into this study. As previously mentioned, we found 3 striking differences. FSWs who enrolled with their RPs, reported relationships almost twice as long as those who did not (6.6 years vs 3.4 years), more frequently defined their RP as a husband, and disclosed their occupation to their RP.

These 3 aspects together suggest that we recruited RPs who appeared to belong to more stable relationships, corroborated by both the length of the partnership and how a FSW defines her relationship. A qualitative study conducted by Stoebenau et al (76) found FSWs define their RPs as a lover, boyfriend, or spouse, which are similar to the descriptions given by the FSWs in our study. However, in Stoebenau's study relationships with these regular partners are not long term. Yet in both Stoebenau's study and ours, what is consistent is the poor acceptability of condom use within these partnerships. Consequently, in both our study and theirs, FSWs are at increased vulnerability to HIV and other STIs because of poor acceptability of condom use.

It is possible that the greater rates of FSWs disclosure of their occupation also signifies a relationship where there is a higher degree of trust and intimacy, whereby she can feel open enough to disclose information about her job that may jeopardise both her and her partner's health. Since FSWs were the primary recruitment agents, this disclosure rate may be one of the most important factors in recruiting RPs into this study, especially, when one's intimate partnership is also associated with a stigmatized and criminalized occupation (48).

Considering these 3 factors alone does suggest that the RPs recruited in our study were potential not representative of more casual short term RPs. Keeping these selection biases in mind, it is reasonable to suggest that our findings may not be generalisable to other FSW-RP relationships, whereby FSWs who are younger, earn more, have shorter relationships with their RP, or have not disclosed their occupation as an FSW would have difficulty feeling comfortable to recruit their partner into this study.

There are 2 other factors, the threat of violence (77) and the loss of their relationship (53), which we posit to have negatively affect enrollment of RPs into our study. However to gauge whether these 2 factors played a critical role in our recruitment, in hindsight, our study would have benefited from focus group discussions with FSWs to see whether this was a reality with their RP.

Overall, what we can say is out of the 68 FSWs enrolled in our study, we were able to recruit 34 of their RPs. Despite several sampling limitations mentioned, all RPs who presented at the clinic agreed to participate in the study, which involved a behavioral questionnaire and obtaining both blood and urine samples.

Who are FSWs and their RPs?

The majority of FSWs' RPs were older than 40, Kenyan nationality, married, and earned less than 10,000 Ksh. While it is difficult to draw direction comparisons with other FSW RPs, since so few studies have surveyed RPs directly, we will draw comparisons using studies on male clients. Like Voeten et al (37) study, our study population of the majority were married. However, compared to 3 other studies (36, 37, 44) studies, RPs enrolled were older, and also had higher prevalence of HIV. Meanwhile, FSWs were slightly younger than their RPs, predominately of Kenyan nationality, and higher HIV prevalence (35.3 % vs. 26.5 %) than their RPs. Unlike their RPs, most FSWs reported being unmarried, widowed, separated, or divorced, which is also found in other studies (40, 53).

Sexual Behaviour within FSW-RP relationship

Outside of vaginal sex, the most common sexual practise reported individually by FSWs and their RPs was engaging in sex during menses. Yet, when we looked at concordant responses within the same FSW-RP partnership, we did not find any agreement. The only agreement between FSWs and RPs that we did find was on oral sex. There are two possible reasons for this. The first reason is that we have too small a dataset, not powered to such relationships, which is very possible in a study of 34 pairs. The second reason is that social desirability may play a role in self reported behaviour, whereby women under report whereas men over report sexual behavior (78).

A possible example of this can be seen in individual FSW and RP reportings of sexual practises, anal sex, in both cases, it is very possible that women may tend to underreport such behaviour. While the opposite is also possible, whereby the 1 RP who reports engaging in anal sex may not accurately reflect what sexual practises are occurring within his relationships, since his partner does not claim the same thing. In comparison, oral sex may be perceived as less sensitive and taboo, in comparison to sex during menses. However, the author has not found any literature to support this assertion.

Social Desirability – He said, she said

Social desirability bias can also play a role in reporting condom use, which is supported by our studies findings. We found moderate agreement between FSW and their RPs on always ($k=0.43$) and never ($k=0.42$) condom. At the same time, we found that FSWs tend to report more frequently always using condoms compared to RPs, which may suggest over reporting on the FSWs part, or under reporting on the RPs part. However, there is the additional challenge in validating sexual behaviour reports because it is often the behaviour that is private and unobservable (79).

To overcome these challenge, researchers often turn to biological markers to corroborate, or internally validate these self reported behaviours. For instance, certain behaviours, such as unprotected sex, having more lifetime partners, and injection drug use, are known to be associated with an increased risk of HIV, so if FSWs reporting more protected sex with their RPs, should be less likely to be infected with HIV. However, in our study, we did not find any relationship with ever or never condom use and HIV infection.

There are 3 potential reasons for this, is that our sample size is too low to detect significant differences in self reported condom use and HIV outcome. Another possibility is that there is no difference between those whose self reported condom use is low and HIV outcome, and it is possible that they or their partner represent another variation of genetic or immunological 'immunity' to HIV infection. In FSW-RP relationships, partners who are seropositive may have converted several years ago, and as such, their viral load is minimal, and even though condom use is reported low, HIV viral load is negligible. However, given the high prevalence of HSV-2 in both FSWs and RPs, this last explanation is unlikely. Meanwhile, the second explanation is possible, this is difficult to assess in our study, since we did not collect information on long term non-progressors. Consequently, the first reason, our sample size being too low to detect differences is most likely the reason why we were unable to find a relationship between poor condom use and HIV seropositivity.

Condom Negotiation

Social desirability bias may explain some of the differences in FSWs and RPs self reports of condom use, another factor the ability to negotiate for condoms use during sexual intercourse play an even greater role in condom use within FSW-RP relationships. Most sex worker interventions rely on FSWs

to negotiate condom use with their clients, while many studies have indicated this is a successful strategy at improving condom use in casual partners (36, 60, 61), this is not found to be the case with regular partners. So in order to develop an effective prevention strategy, at the very least, it is important to know whether FSWs even ask their RPs to wear a condom during sex.

Of the 33 FSWs who were asked this question in our study, 8 replied no, while 25 said yes. In hindsight, this study could have also asked why the 8 FSWs did not ask their RP to wear a condom. Based on findings from other studies, we theorize some possible reasons would have been loss of relationship (77), indication of distrust (80), threat of violence (77), FSW is infected with HIV (53). However, we did not ask this question, but on a separate question we asked whether an FSW does use condoms in her relationship with RP because of the threat of violence, only 5 responded affirmatively, and it was not significantly associated with whether an FSW asks her partner.

What we did ask, is whether their RP wore a condom after being asked. Of the 25 FSWs who answered this question, 14 said yes. When we looked at their RPs response to whether they wore condoms when FSWs asked, even fewer responded with a yes. While there may not be internal consistency on condom negotiation questions in FSW-RP relationships, what can be observed is that when RPs are asked to wear a condom, few wear one, indicating that condom negotiation power may lie more in favour of RPs than FSWs. Consequently, if this is the case, to develop more effective prevention strategies, one needs to focus on both FSWs and their partners to have an impact on condom use (81).

Risk perception and Acceptability of Condom Use

Previous research on male clients confirmed that men who pay for sex are more likely to use condoms (37, 55, 56, 58). Comparatively, male clients with their partners whom they do not pay for sex, are less likely to use a condom even if their partner is a FSW (37, 55, 56, 58). Overlapping factors associated with low levels of condom use is the perception of steadiness(59), intimacy/trust (82), and poor HIV risk perception (83).

These factors also appear relevant explanations for RPs discrepancy in condom use behaviour. Our study's findings support the first two factors, observed by RPs reasons not to use condoms: long standing relationship and trust, which were both found to have a statistically significant relationship with condom use ($p < 0.05$). While this study did not find any relationship between RPs perceived HIV risk and condom use or HIV prevalence, there is a good chance that poor perception of HIV risk impedes other relevant distal endpoints, such as enrolment in an HIV prevention programme.

Well known HIV risk factors, such as awareness of one's own HIV status as well as one's partner's HIV status, are considered to be crucial for self perception of HIV risk. In this study, 71% of RPs reported not knowing their HIV, comforting to know 70% of RPs' main motivation to enrol in this study was to know their status. While this relationship was not found to be statistically significant ($p=0.088$), it is still very plausible that one of the main reasons RPs' enrolled in this study was to know their own HIV status.

Accurate perception of self risk appears to be multifaceted and complex. While some studies have hypothesized poor perception of one's risk and one's partner's risk of HIV as potential risk factor for HIV infection (75, 79, 84), and Prata et al. (52) have shown that accurate HIV risk perception is correlated with consistent condom use. However, accurately capturing self perception of HIV risk in behavioral questionnaires is challenging because it requires an individual to know what are the relevant risk factors, to know what they are in one's life, and accurately assess one's risk based upon knowledge and self awareness.

This study did not specifically ask questions on HIV knowledge, however, we did ask known risk factors associated with HIV outcome: condom use and partner type.

When RPs were asked directly whether they perceived themselves to be at risk for HIV, and 80 % stated that they were a low or no risk for HIV. This underestimation of risk is a serious obstacle for developing prevention programmes, which require one to be aware of own's risk. Considering that these men are recruited by their FSW partner, whether they perceive themselves to be at risk for HIV infection or not, based on high HIV prevalence in their partners, they are. Even in instance, where their partner has not disclosed their occupation to them, the majority of these men had concurrent partners, had paid for sex (corroborated by FSWs reports), and reported never using condoms with their FSW partner and infrequently with their other partners. Their low levels of condom use may indeed accurately reflect this poor self perception of HIV risk.

Without surveying RPs on basic knowledge of HIV, it is difficult to say which plays a greater role: lack of awareness or poor HIV perception. Nevertheless, whether RPs are not aware of their HIV risk factors or if they are aware and still do not accurately perceive their risk, both factors are barriers in recruiting them for research and prevention programmes.

Consequently, it is possible in our study RPs who are at highest risk of HIV infection may not have enrolled in this study because of lack of self awareness or poor perception of HIV risk, which could be reflected in both fewer riskier behaviours reported and fewer cases of HIV and other STIs.

Impact on HIV prevention strategies

If interventions rely on solely on FSWs to identify and recruit their RPs, these interventions run into potential barriers of FSW privacy and confidentiality. FSW who feel less secure, fear the threat of violence in their relationship, or fear the loss of a relationship, may be less eager to recruit their RPs into the study. This assertion is supported by our findings of FSWs who enrolled with their RP in our study compared to those who enrolled without. Consequently, research run the risk of not being able to identify or recruit sufficient numbers of RPs to have a better understanding of their contribution to the HIV epidemic. As a result, effective prevention strategies for FSWs and their RPs may be limited to what presently exists in Kenya. This means the primary mode of HIV prevention may rely solely on general campaigns advocating to men to know their status and HIV risk factors.

In our pilot project, 16/34 RPs the primary risk factor for HIV infection is having unprotected sex with their FSW partner. They may consider their FSW to be their wife or steady partner. Consequently, they may not be able to readily identify with IEC or BCC campaigns targeted at improving condom use with higher risk sexual partners, such as FSWs, because they may not perceive their partner to be an FSW, or concurrent partners.

If interventions want to access RPs directly without their FSW, there needs to be sufficient knowledge on how to identify them. The most efficient way would be for RPs to be aware of their HIV risk, and self present at present at prevention initiatives. However, based on this study's findings this is unlikely to happen. Yet, with the advent of free ARV access, RPs may be more likely to participate in study's and prevention strategies, which is supported by a number of RPs who reported wanting to know their status, and if they were positive to be able to seek free treatment. Among the top reasons why FSWs were motivated to enrol in this study, were to know their RPs status and to seek treatment if an infection is found, which highlights the dual benefit for FSWs to recruit their RPs.

Sexual Behavior outside of FSW-RP relationship

We hypothesized that sexual risk taking in terms of unprotected sex within the contest of FSW-RP relationships is frequent, and possibly sexual risk taking when compared to the general population. KDHS 2003 (1) reports 35 % of women and 51% of men surveyed to use condoms with their last higher risk sexual encounter. In comparison, FSWs reported 100 % condom use with their last higher risk sexual encounter, ie. Casual clients, and almost 100% condom use with their regular clients. While the KDHS did not collect condom use information on regular partnerships, our study did, and more frequently than not, FSWs reported never using condoms with their RPs. Also, what we did find was based on increased perception of intimacy/trust and perception of partner as being more steady, influenced condom use negatively, meaning the more steady a partner was perceived to be the less likely condoms were reported to be used.

We also theorized that FSWs RPs had additional concurrent unprotected sexual relationships, which we found to be the case. In total, 67.6 % or 23 RPs reported a total of 128 concurrent partners. In comparison, 11.9% men surveyed in the KDHS 2003 (1), reported more than one partner in the past 12 months. For RPs, self reported condom use varies depending on partner type, and perceived intimacy level, but in general, it is very low. With their wives, RPs never use condoms. Distribution of never use of condoms is as follows: 76.9 % with other FSWs, 65.2% with their FSW partner, 58.3 % with their regular girlfriend, and 15.7% with their occasional partner. Comparatively, men from the KDHS 2003 survey reported 51.8% condom use with their last higher risk sexual encounter. If one considers, an FSW to qualify as a higher risk sexual encounter, compared to men in the general population who report 51.8% condom use, RPs reported condom use of 34.8%. Both higher levels of concurrency and unprotected sex as reported by RPs, supports our aforementioned hypothesis.

However, there is very important limitation - our very small sample size. Based on this, future investigation is necessary to conclude whether the RPs present in our study are representative of other FSWs RPs in Nairobi, Kenya, and outside of East Africa. Studies from West Africa – Benin(36) and Senegal (39) do support the assertion that FSW RPs are a higher levels of concurrency and unprotected sex, but more needs to be known in the eastern Africa context.

HIV and STI Prevalence

Overall Gonorrhoea, Chlamydia, and syphilis prevalence is uncommon among FSW-RP couples, HSV-2 and HIV-1 infection are common. The prevalence among FSWs is roughly 4.1 times higher (35.3%) and among RPs is roughly 4.7 times higher (26.5%) than the general population's HIV prevalence of 8.7% among women and 5.6% among men (1). In comparison to the general population HSV-2 prevalence in the of 43.4% among women and of 29.2% among men (17), HSV-2 prevalence among FSWs is 2.2 times higher (94.1%) and among RPs is 2.1 times higher (61.8%).

Thirteen of the 34 FSW-RP couples are living with HIV/AIDS (1/334; 38.2%), 8 of these couples are HIV concordant, 5 discordant (5/34; 14.7%) – whereby 4 out the 5 couples has a seropositive female. In Kenya, roughly 10 % of all couples are living with HIV/AIDS, of which 3.9% are estimated to be concordant and 5.9% discordant. In our small study, 38.2% of couples are living with HIV/AIDs, and of our sample 23.5% are in concordant and 14.3% are living in discordant partnerships. While this sample population is very small, even based on conservative estimates, FSW-RP couples have higher rates of HIV-1 and HSV-2 prevalence, as well as HIV-1 concordancy and discordancy compared to the general population.

RPs: Potential Bridging Population in Kenya

Overall, RPs have a low perception of self risk for HIV (82.4%; 20/34), with most not knowing their HIV status. Over 40 % of RPs have concurrent partners, including their FSW partner. In total, 23 RPs report 128 concurrent partners. Self reported condom use varies depending on partner type, and perceived intimacy level, but in general, it is very low. With their wives, RPs never use condoms. Distribution of never use of condoms is as follows: 76.9 % with other FSWs, 65.2% with their FSW partner, 58.3 % with their regular girlfriend, and 15.7% with their occasional partner. Among RPs, prevalence of HIV is 26.5%, HSV-2 is 61.8%, and syphilis is 2.9%. Based on relevant bridging population indicators: low perception of self risk, high levels of unprotected sex with their concurrent partners, and high background of HIV, RPs could be considered a potential bridging population for HIV and other STIs into the general Kenyan population.

Chapter 6: Conclusions and Recommendations

Conclusions

This study's overall goal was to assess whether FSWs' RPs are a potential bridging population for HIV and STIs, from the high risk FSW population to lower risk general population women. Both behavioural and biological data and the concurrent literature review suggests that FSWs' RPs are a potential bridging population for HIV and other STIs in the Kenyan HIV epidemic. The lack of government prevention responses targeting both regular partnerships, high risk FSW-RP couples and low risk wife-husband couples, in the general population is a major limitation in preventing new infections.

Sexual Behavior within FSW-RP relationships

The findings from this pilot project indicate that unprotected sex within FSW-RP is common. The most important factors influencing the sexual risk-taking behavior of FSWs and their RPs were trust, the duration of the relationship and the perceived risk of HIV/AIDS. Both partners reported not using condoms as evidence of trust in the relationship and the RPs perceived themselves to have low risk of developing HIV/AIDS due to their perceived fidelity to their partners.

Sexual Behavior outside of FSW-RP relationships

Both the literature review and the study results confirm, FSWs are more likely to report using condoms within their less intimate relationships, such as casual and regular clients, whereas, with their RPs, they are significantly less likely to report condom use. Multiple concurrent partnerships is commonly reported by FSWs/RPs, and the majority of RPs report less than consistent condom use with their additional partners. A similar trend of perceived intimacy and condom use is also reported by RPs with their sexual partners, such that the more regular or greater the perceived level of trust and intimacy, the less likely RPs report condom use. For instance, RPs report condom use the least with their wives, followed by their FSW wife or live-in partner, regular girlfriends, other FSWs, and then occasional partners.

STI and HIV Prevalence

FSWs and their RPs, in this small pilot project, have much higher HIV-1 and HSV-2 prevalence rates than compared to their counterparts in the general population. Furthermore, RPs are 42 times more likely to be found HIV positive if their FSW partner is also HIV positive.

RPs: Potential Bridging Population

RPs report multiple concurrent partnerships with population of differing HIV risk. The different partner types reported were: wives, FSWs regular partner, regular girlfriends, occasional partners, and other FSWs, and men. With their additional concurrent partners, RPs commonly reported low levels of condom use. These multiple concurrent partnerships along with high prevalence of HIV-1 and HSV-2, do provide supporting evidence that RPs may be a bridging population for HIV-1 and other STIs in the general population.

Recommendations

This study recommends the development of a multi level approach to preventing risk of HIV transmission and acquisition among FSWs, their regular partners, and their regular partners' partners.

At Governmental Level - NACC

Allocate resources to where the most infections are occurring:

- FSWs, their RPs, and their clients
- Serodiscordant couples
- MSM and IDUS

Review existing programmes in NGOs and International research groups which are known to have an impact on both behaviour and HIV incidence

Review the benefits and costs of criminalizing prostitution in Kenya's HIV/AIDS epidemic

Review the benefits and costs of maintaining ABCs based upon the current drivers at at risk populations of the HIV epidemic

Prevention Level – NACC and MoH

Scale up existing prevention interventions targeting FSWs and their partners, in particular STI control and ARV access

Review existing prevention strategies aimed at reducing multiple concurrent partnerships and evaluate whether they are having an impact on HIV transmission

At Research Level – KEMRI and Pumwani/Majengo Research Cohort

Design and conduct several qualitative studies different qualitative studies in populations identified most at risk for new infections on to explore how perceived intimacy and trust influence HIV risk perception and condom use among different regular partnerships to identify potential areas to improve condom use

Design and conduct a larger prospective study on FSWs and their RPs powered to detect whether this small study's findings are representative of sexual behaviours within and outside of FSW-RP relationships

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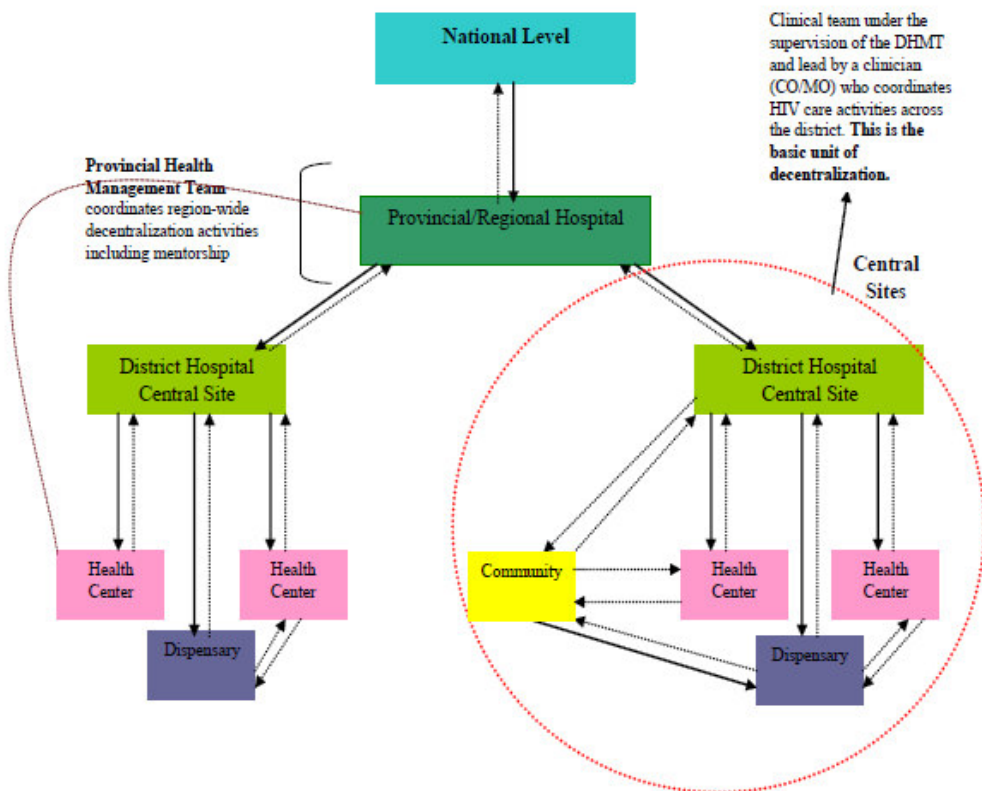
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Annex 1.2: Health System Overview

Summary of Relationship between Facilities within a Region



Source: (85)

Annex 2.1 Research Table

General Objective

To describe and to analyse factors of sexual risk taking and networking among fsws and their rps, in order to identify whether fsws' rps sexual risk-taking and networking behaviours and their STI levels including HIV-1 constitute them to be a possible bridging population in the Kenyan HIV epidemic.						
	Objectives	Research Questions	Hypotheses	Factors	Methodology	Respondents
1	To describe background characteristics of FSWs and their RPs.	What are the background characteristics of FSWs and their RPs?		Socio-demographics, definition of rp, fsw history, HIV and STIs status	Review of Existing Literature; Clinic-Administered Questionnaire for background characteristics, Laboratory Protocol for biological endpoint	FSWs; RPs
2	To describe the sexual risk-taking characteristics of from FSWs perspective with her RP and with her clients, and from RP perspective with his FSW partner, in order to identify factors associated with sexual risk-taking.	<p>What are the sexual risk taking characteristics of FSWs with her RP and with her clients?</p> <p>What are the sexual risk taking characteristics of RP with his FSW partner?</p> <p>What are the factors influencing sexual risk-taking behaviour of FSWs, RPs, and within the context of their relationship?</p>	Within the context of FSW-RP relationship, sexual risk-taking and networking is frequent.	Condom use with partner; types of sexual practices; awareness of partners risk factor; idu use; alcohol use; concurrency levels	Review of Existing Literature; Clinic-Administered Questionnaire for self reported sexual risk-taking and networking	FSWs; RPs
3	To describe RPs sexual risk-taking and networking characteristics with his additional concurrent partners.	<p>What are the sexual risk-taking and networking behaviours that RPs report with his additional partners?</p> <p>How do these factors reported by RPs compare with other descriptions of bridging populations?</p>	Outside of FSW-RPs sexual relationship, a large proportion of RPs engage in additional, concurrent unprotected sexual relationships.	Condom use, types of sexual practices, number and types of sexual partners, concurrency of sexual partners	Review of Existing Literature; Clinic-Administered Questionnaire for Self-reported sexual risk-taking and networking	RPs
4	To assess point prevalence of HIV and other common STIs (<i>N. gonorrhoea</i> , <i>C. trachomatis</i> , syphilis, and <i>Herpes simplex</i> type 2) in FSWs and their RPs and the levels of seroconcordancy.	<p>What is the prevalence of HIV-1 and other STIs among FSWs and their RPs?</p> <p>What are the levels of seroconcordancy among FSWs and their RPs?</p>		HIV-1, <i>N. gonorrhoea</i> , <i>C. trachomatis</i> , syphilis, and <i>Herpes simplex</i> type 2, HIV-1 serodiscordancy	Laboratory Protocol for biological endpoints	FSWs; RPs

5	To discuss the possible role of RPs as a bridge population within the dynamics of HIV transmission.	In comparison with the general Kenyan population, do FSWs and their RPs have higher levels of HIV-1, other STIs, and HIV-1 seroconcordancy?	Compared to the general Kenyan population, both FSWs and RPs will have high levels of HIV-1 and other STIs.	HIV-1, <i>N. gonorrhoea</i> , <i>C. trachomatis</i> , syphilis, and <i>Herpes simplex</i> type 2, HIV-1 serodiscordancy	Review of existing information	FSWs; RPs
6	To compare self-reported sexual risk-taking with biological indicators such as the prevalence of HIV-1 and other STIs, in order to identify factors associated with HIV-1 and other STIs.	What is the relationship between self-reported sexual risk-taking and networking factors and STI status, including HIV-1, among FSWs and their RPs?	HIV-1 and other STIs will be significantly associated with low condom use, concurrency of other sexual relationships, and high frequency of partners.	Condom use, types of sexual practises within partnership, ever paid for sex, FSWs occupation disclosed	Statistical Comparisons with self-reported sexual risk-taking and biological endpoints	FSWs; RPs
7	To critically appraise my study design, including the internal reliability and validity of self-reported questionnaires by comparing levels of sexual risk-taking reported by each member of fsw-rp pair.	What are my study limitations, threats to internal validity, external validity, and reliability? How can I account for these limitations, and threats to internal validity, external validity, and reliability in my results and analysis?	FSWs will under-report sexual risk-taking to clinic staff due to social desirability bias, while RPs will report more frequent sexual risk-taking.	Condom use, types of sexual practises within partnership, ever paid for sex, rp aware that partner is an fsw	Comparing self-reported sexual risk-taking and statistical methods	FSWs; RPs
8	To identify what are the current gaps in Kenya's HIV national policy, programmes, and research, in order to assess what new knowledge has been generated by this descriptive cross sectional survey.	What are the current gaps in Kenya's HIV national policy, programmes, and research? What new knowledge has been generated by this study? What are its implications for Kenya's different health care levels?		Phase of HIV epidemic; health care policy priorities, service delivery gaps, research	Review of existing priority setting documents on UNAIDS, peer-reviewed journals, Kenyan HIV policy papers and service delivery evaluations	

Annex 2.2: Literature Review Methodology

LITERATURE REVIEW METHODOLOGY

Study Type and Description

The literature review is aimed at describing and analysing factors of sexual risk taking and networking among FSWs and their RPs, in order to identify whether RPs are possible bridging populations in Kenya's HIV epidemic. Consequently, both descriptive qualitative and quantitative data will be gathered.

Search Strategy

A review of published peer reviewed journal articles, abstracts from International AIDS Conferences, Kenyan National Ministry of health (MoH), and National AIDS & STI Control Programme (NASCOP) reports and policy papers, as well as documents from the WHO, UNAIDS, and UNGASS was conducted.

The online search was conducted using the Google and Google Scholar search engines as well as the Pubmed database. Publications were considered only if written in English or accompanied by English translations. The inclusion criteria were based on whether the publication reported background characteristics, sexual risk taking and associated factors, HIV-1 and STI prevalence and associated factors of FSW and their RPs; or covered working definitions of FSWs, FSWs' sexual partners including clients and regular partners, concurrency, mature HIV epidemics, or Kenyan HIV modes of transmission and responses.

Key Words:

Female sex workers, commercial sex workers, sex workers, clients of sex workers, clients of female sex workers, sex workers partners, sex workers regular partners, regular paying clients, regular paying partners, female sex workers and sex workers male partners, HIV, STI, STD, concurrency, multiple partners, serial monogamy, concurrent partners, condom use, male clients intervention, female sex worker or sex worker interventions, Kenya, East Africa, Sub-Saharan Africa, modes of transmission, population attributable risk factor, sexual risk taking, sexual networking, bridging population, core transmitter group, high risk population, vulnerability, at risk population.

Study Limitations

Literature review is a useful for gathering descriptive background information on RPs' socio-demographic and sexual behaviour characteristics. However, this study design suffers from a few key limitations:

1. Selection Bias

i. The author only reviewed documents written in English or translated into English, which bias her analyses in 2 ways. First, there is the possibility that there are fewer publications on FSWs and their RPs in English, thereby limiting the representativeness of the literature reviews' findings compared with other non-English speaking contexts. However, since one of Kenya's official languages is English, this limitation may not greatly impact the applicability of the literature review's findings to the Kenyan context. However, it is possible that the author may not pick up on the wide range of sexual behaviours and HIV risk within FSW-RPs relationships, potentially underestimating the risk of HIV infection within these partnerships.

ii. The author selected abstracts, journal articles, and published reports from the PubMed database and Google Scholar search engine, which may result in the

omission of qualitative studies and relevant academic theses not included in these databases. Considering the time constraints and nature of the thesis, it was not possible to engage in additional searching. Consequently, the literature review may present an incomplete or limited picture of the nature of FSW-RP relationships.

iii. Publication Bias: the author only presents published findings. As a result, there is a good chance that if there were studies which found insignificant relationships between FSWs' behavior with their clients and steady partners, or no relationship between RPs condom use and HIV status, but were not published, they would not be included in the literature review, thereby limiting the author's ability to state whether RPs are a bridging population within Kenya.

Since there are few studies focusing on FSW-RP relationships, there is a good chance that the literature is not representative of these relationships, and there will be challenges to its generalizability. The author will do her best to highlight those findings which are context specific.

HYPOTHESIS LIMITATIONS

This paper's hypotheses are limited by several factors, which are linked to study type, sampling and recruitment methods, and the methodology used to collect and interpret information. Since the author conducted both a literature review and a cross sectional study, the study limitations will be split into 2 chapters. In this chapter, the author will strictly focus on the literature reviews methodological limitations. The limitations of the cross sectional study will be discussed at the end of Chapter 4.

Annex 4.1: Research Proposal

Investigator Rupert Kaul
Proposal title BRIDGING POPULATIONS IN THE KENYAN HIV EPIDEMIC: SEXUAL NETWORKING BY REGULAR CLIENTS OF FEMALE SEX WORKERS

1. Background, Purpose, Objectives

Currently, the UN estimates between 38 to 42 million people are infected with HIV/AIDS. Certain "core" high risk population groups, such as women who exchange sexual services for money or gifts (female sex workers; FSWs), have very high rates of partner exchange and are responsible for a disproportionate fraction of incident HIV infections. For instance, in Ghana approximately 80% of HIV infections in men are due to contact with an infected FSW. In turn, FSWs are themselves at a greater risk of acquiring HIV or sexually transmitted infections (STIs) because of their high number of sexual partners and risky sexual behavior, such as injection drug use and unprotected sex. As a consequence, there are several community based organizations (CBOs) and non-governmental organizations (NGOs) around the world working to educate FSWs to modify their risky behavior. In Kenya, peer-based HIV risk reduction interventions have been shown to be quite successful at reducing risky behavior among FSWs. However, these strategies are effective in reducing risk taking with casual (paying) clients, but less successful with regular clients or boyfriends, who have a more long-term relationship with the FSW that may not involve classical transactional sex.

Previous studies in West Africa (Benin and Ghana) have shown condom use with regular clients to be minimal, so it is possible that they act as a 'bridge' for HIV and STIs from high-risk FSWs population to low-risk general population, or to other FSWs. These studies found that boyfriends of FSWs to have extensive sexual networks, with several concurrent sexual partners, such as wives, girlfriends, and other FSWs. Combined with high rates of STIs and infrequent condom use, the aforementioned studies implicate regular partners of FSWs to be a significant "bridge" for HIV and STI transmission from the FSW core group into the general population. However, the key parameters of the HIV-1 epidemic are different in East Africa, and sexual networking and risk behaviour is highly culture specific. Other regional differences may also be important, such as the maturity of HIV epidemic, male circumcision rates, and population migration patterns. Therefore, in order to elucidate the role of FSW regular clients as a possible bridging population in Kenya, we propose examine the STI rates, sexual networks and HIV transmission dynamics of female sex workers and their regular male partners, in the setting of a longstanding FSW research clinic in the Pumwani slum of Nairobi.

HYPOTHESES

1. Sexual risk-taking is frequent in the context of the FSW - regular partner relationship, and a large proportion of regular clients engage in additional, concurrent unprotected sexual relationships.
2. Compared to the general Kenyan population, both regular clients and FSWs will have high levels of HIV-1 and STIs.
3. HIV-1 and other STIs will be significantly associated with low condom use, concurrency of other sexual relationships, and high frequency of partners.
4. FSWs will under-report sexual risk-taking to clinic staff due to social desirability bias, while regular clients will report more frequent sexual risk-taking.

SPECIFIC OBJECTIVES

1. To study sexual risk-taking in the context of the FSW - regular client relationship.
2. To elucidate the extent of additional sexual networking by these regular clients, as a marker for their role as a bridging population.
3. To measure prevalence of HIV and other common STIs (*N. gonorrhoea*, *C. trachomatis*, syphilis, and *Herpes simplex* type 2) in FSWs and their regular clients, and levels of concordancy.
4. To examine the association of self-reported sexual risk taking (condom use, number of sexual partners, and concurrency of sexual partners) with biological indicators such as the prevalence of HIV-1 and other STIs.
5. To evaluate the internal reliability and validity of self-reported questionnaires by comparing levels of sexual risk taking reported by each member of the FSW-regular client pair.

2. Research Methodology

Prior to enrolment:

- An information form (attached) will be delivered to regular clients by their FSW partner, inviting them to participate.

Initial visit:

- Written informed consent will be obtained (see attached).
- A socio-demographic, sexual history and clinical questionnaire will be used to collect data (see attached).
- Male participants: Symptomatic STIs will be diagnosed and treated syndromically, including gonorrhoea and chlamydia (by urine PCR), and syphilis (by serology). Men will be provided with HIV voluntary counseling and testing.
- FSWs: HIV-1 serology, STI testing and physical exam will be performed as usual for the biannual resurvey, but a more detailed behavioural questionnaire will be administered (see attached). One swab from the cervix will be obtained for gonorrhoea and chlamydia PCR testing, and one for *T. vaginalis* and *N. gonorrhoeae* culture. If any these infections are diagnosed, participants will receive treatment free of charge.
- Plasma and peripheral blood lymphocytes will be stored for the study of HIV-1 specific cellular immune responses.
- All participants, male and female, will be provided with counseling regarding HIV transmission and safer sex. A free supply of male condoms will be provided.

Results visit (2-4 weeks post initial visit):

- Any STIs diagnosed will be treated specifically. HIV results will be provided, and post-test counseling will be performed. HIV infected FSWs needing antiretroviral therapy according to WHO guidelines will have this provided through the Pumwani Clinic.
- All HIV infected men will be referred to the Coptic Clinic in downtown Nairobi, which provides HIV diagnostics and therapy if needed, with preference given to persons diagnosed through research projects in the area.

Endpoints:

The major endpoints will include incident HIV-1, *N. gonorrhoeae*, *T. vaginalis*, *C. trachomatis* and syphilis infections.

The correlates examined in relation to the major endpoints will include:

- Education level
- Number of years in the profession (Strictly for FSWs)
- Age
- Average number of clients per week (Strictly for FSWs)
- Average income per week
- Current contraceptive method (Strictly for FSWs)
- Reported condom use

Secondary endpoints for both FSWs and their regular partners will include reported condom use, number of partners per week, average charge per sexual act.

Secondary endpoints specifically for FSWs regular partners are number of concurrent sexual relationships, types of sexual partners (FSWs, wives, girlfriends, other casual partners, and one-time partners), and frequency of migration for work or travel.

Laboratory Investigations:

The following investigations will be performed:

- 1) *N. gonorrhoeae*, *T. vaginalis* and *C. trachomatis*: Cervical and urine specimens will be tested for these STDs using bacterial culture and/or PCR (Roche, USA).
- 2) HIV and syphilis serology: One tube of blood will be collected, and serum will be tested for HIV-1 antibodies (Detect HIV-1, Biochem Immunosystems, Canada) and those positive on the first ELISA will have a second confirmatory ELISA test (Recombigen, Cambridge Biotech, Ireland). If the HIV-1 ELISA is positive, the plasma viral load will be measured using PCR. Serum will also be tested for syphilis by RPR (Bekton-Dickinson, Md) and positive specimens will be evaluated for the presence of TPHA (Biotech Laboratories, U.K.).
- 3) Cellular immune responses: Lymphocytes from this one tube of blood will be tested for immune responses (cellular and antibody-based) against HIV-1, or will be frozen in order to have these tests performed at a later date.

3. Participants

We aim to recruit 50 FSW-client pairs into this cross-sectional study.

The Pumwani Sex Worker Cohort: This cohort was established in 1985 to study the epidemiology, biology and immunobiology of HIV-1 and STDs. The cohort currently comprises over 2200 women, with new enrolment continuing at the rate of approximately 100 women per year. These women have an extremely high risk of HIV-1 infection, with approximately 60% of women being HIV-1 seropositive at enrolment. Despite effective intervention programmes, the annual incidence of HIV-1 infection among initially seronegative women is currently about 10%. This is a dramatic decrease from the initial incidence of 45% annually. Funding for antiretroviral therapy provision to HIV-infected women meeting WHO criteria for therapy was obtained from the Presidents Emergency Program For AIDS Relief (PEPFAR), and will be rolling out within the next few weeks. In addition, all women are screened biannually for STIs, and have access to the clinic at any time for therapy of symptomatic STIs and other outpatient medical problems (hypertension, URTI, etc). Their access to core clinical services will not be affected by participation in this study in any way.

Participants

Regular clients: Over half of the Pumwani FSWs report having 1-2 regular clients, and condom use is much lower with this group than with casual clients. HIV and STI testing has been available to these men for years on an informal basis, as requested, but no research has been done in the population. We will approach men with a written information form, passed on to them by their FSW partner. Men interested will be invited to attend the clinic on a Saturday, when the clinic is traditionally closed, for enrolment in this study of regular clients.

4. Recruitment

All participants will be selected from women already enrolled in the Majengo sex worker clinic and their regular clients. Recruitment in the Majengo clinic is based on community outreach visits performed by clinic staff, and coordinated by "peer leaders" – established, respected members of the sex worker community – who also serve as peer counselors and assist in clinic activities such as client tracing.

The investigator has no current relationship to participants from either cohort, although he did work as a physician in the Majengo clinic during 1995-1996.

5. Risks and benefits

The risks of the procedures performed in this study are minimal. Both cervical specimen sampling (for STI diagnostics) and venipuncture to obtain peripheral blood are routinely performed as part of a larger ongoing research project. Minor side effects, including a discomfort and minor localized bleeding have been seen. Participants will be warned of these in advance.

The major benefit of enrolling in the Pumwani cohort to women is the provision of outpatient medical services. This will include ARV provision in the very near future. However, it is emphasized by study staff that refusal to participate in any substudy will in no way affect their access to clinic services. For their regular male clients, enrolment will provide access to STI screening and therapy, as well as HIV testing and referral for ARV therapy off-site as required.

The study data will be compiled into a database in SPSS. This will include all results of the immunological testing and the current clinical status. In addition, the database will contain basic epidemiological parameters such as age, number of daily clients and other relevant behaviours. However, data from all participants will be linked to a coded study number. No personal identifiers whatsoever (name, social security number, address, etc) will be included in the database, and only study staff (Dr. Kaul and the student/technician assisting with this project) will have access to that database.

This study will collect data in a cross-sectional fashion. However, the Pumwani cohort is prospective. The database will therefore be maintained at the end of the study, in order to allow possible future correlation of these results with outcomes such as disease progression or transmission to others.

6. Compensation

The clinic provides basic outpatient medical facilities, providing free medical care to enrolled participants. Women having to take public transport to the clinic for their routine follow up visit are reimbursed the cost of transport as a part of the larger study protocol. No additional compensation will be provided by this study. The same arrangement will be provided to men.

7. Conflicts of interest

There are no known potential or actual conflicts of interest.

8. Informed Consent Process

A) Pumwani (Majengo) Sex Worker Cohort

All sex worker participants in the proposed study will be enrolled through the Majengo cohort study. Until 2002, the practice in the Majengo cohort had been to obtain informed verbal consent at study enrolment, in part because many of these women are unable to read or write. Since then we have been obtaining informed written consent (attached).

A selected subgroup of women from the Majengo cohort will be approached for enrolment in this study of mucosal CD8+ responses. This study will be nested within a larger, NIH-funded study of mucosal CD4+ and antibody-mediated mucosal immunity. Each woman will be approached individually by the clinic physician, and the risks and benefits of the study will be explained. An information package describing the mucosal study will be provided (see attached; to be administered in Kiswahili), and informed written consent will be obtained (see attached). For the sake of simplicity, the information package and informed consent form used will be the same as those for the NIH-funded study "Immunogenetic and Immuregulatory Basis for Mucosal Immune Responses to HIV-1 in Highly Exposed Uninfected Sex Workers" (attached).

B) Regular male clients

The FSWs reporting regular clients in our cohort appear to quite motivated to have their partners screened for HIV and other STIs, and should be compliant in bringing these partners a copy of the study information form (attached). Men will then attend a further "information session" at the clinic on a Saturday, when the clinic is otherwise closed, where they will have one-on-one discussions with the male clinic physician. The study will be explained in detail, and any questions addressed. Men will then sign the informed consent form (also attached), complete the behavioural questionnaire, undergo HIV-1 pretest counseling from a trained clinic nurse, and then have biological specimens collected (as outlined above).

9. Scholarly review

This is a cross sectional, one time only study. However, the hope is to use these pilot data to apply for peer-reviewed CIHR funding, in order to establish a prospective male cohort. In this case, the protocol will undergo full scholarly review.

10. Additional ethics reviews

Ethics approval for the larger NIH-funded study are attached from the University of Manitoba and the Kenyatta National Hospital Ethics Review Board (KNH ERB). The smaller substudy (this proposal) will also be submitted to the KNH ERB.

- | | |
|----------------------------|-----|
| 11. Contracts | N/A |
| 12. Clinical Trials | N/A |

Annex 4.2 A : Male Subject Information - English

SUBJECT INFORMATION FORM: MALE PARTICIPANTS

Date ___ / ___ / ___ (dd/mm/yy)

To be administered in a Kiswahili translation

The University of Nairobi and its collaborators have been working for many years to fight the epidemics of AIDS and other sexually transmitted diseases (STDs) that we are facing in Kenya. HIV is spread by unprotected sex with a person who is infected by the virus. Since you can be infected by HIV for many years and seem perfectly healthy, the best protection against HIV is to have no sex, or sex with only one partner that has been tested and is HIV negative (**A**bstain or **B**e faithful to one partner). If this is not possible, it is extremely important to protect yourself by using condoms all of the time with your sexual contacts. The condom, if properly used, will prevent most sexually transmitted diseases (STDs), including AIDS.

Having another sexually transmitted disease, such as gonorrhea or syphilis, can increase the chance that you then become infected by HIV. Sometimes these STDs cause a painful ulcer, discharge from the penis, or pain when you urinate. However, sometimes you may have an STD and not know it, because you do not have any symptoms. If you join this study, we will be testing for common STDs, through a blood test and a urine test, and will offer counseling and treatment (if available) for any infections that you have. Also, we will be testing you for HIV infection. You will receive both pre and post-testing counseling; your results will be presented to you in a confidential setting with the clinic nurse and doctor available to answer questions. If your HIV test is positive, medications known as antivirals are now available in Kenya that can control the infection. These medicines do not cure the infection, which is something that you carry all your life, but if you take the medicines carefully they can bring it under control. You may not need to start taking these medicines immediately, if your immune system is healthy. However, if HIV has damaged the immune system then you may need to start taking the medicines right away. To find out whether you need treatment, and to get the medicines if you need them, if you are HIV positive we will refer you to the Coptic Clinic in downtown Nairobi, near Mbagathi Hospital. If you chose not join the study, but would still like to know your HIV status, we will refer you to your nearest HIV voluntary counseling and testing center.

Another important part of this study is for you to fill out a questionnaire that asks many questions about you, your partner (who told you about this study) and any other sex partner(s) that you have. These questions include personal details about the type of sex, whether you use a condom, and whether you have had symptoms of HIV/AIDS or STDs.

If you agree to participate in the study, you will first be given counseling, and we will ask you for a blood and urine specimen for STD and HIV testing. The results of these tests will be ready after one week, so we will make an appointment for you to return to the clinic in 1-2 weeks to get the results, further counseling, and STD treatment (if necessary). At both visits, you will be reimbursed 150 KSh to cover the cost of transportation. Since none of the treatments we can offer you will protect you from

future STDs or HIV, you should continue to use condoms every time that you have sex, including with your regular partners.

There are no major risks for you to take part in the study. The amount of blood collected is quite small (several teaspoons), and does not pose any health risk. However, a few people may have some soreness or a bruise where we take blood from your arm. The results of your HIV and STD tests will only be shown to you and the clinic staff (the nurse/doctor and counselor looking after you), and will be kept strictly confidential. The questionnaire results will be entered into a computer for study, but your name will not be used, only a code number. All information that is obtained will be kept strictly confidential, and your identity will not be known, except to those providing your medical care. In particular, no results from the STD/HIV tests or answers from the questionnaire will be given to your regular partner, although you may inform her if you wish. In the same way, we will not provide you with any test results from your regular partner, although she may decide to share these with you herself.

The main benefit that you obtain from this study is screening and treatment for STDs, and screening and counseling for HIV. If you test positive for HIV infection, you will be referred to the Coptic Hope Enter for Infectious Diseases, a new clinic that has been providing antiviral (HIV) treatment since early 2005. The confidential information that you provide through your questionnaire will help us to develop new strategies to slow or stop the spread of HIV and STDs in Kenya.

Participation in this study is voluntary and you are free to withdraw from the study at any time, but please let us know if you decide to do so. If you agree to participate in the study, please sign the attached form.

Annex 4.2B : Male Subject Information – Kiswahili

FOMU YA MAELEZO KWA MSHIRIKI WA UTAFITI: MSHIRIKI WA KIUME

Tarehe: ___/___/___ (siku/mwezi/mwaka)

Chuo kikuu cha Nairobi na washiriki wengine, wamefanya kazi ya kukabiliana na janga la ukimwi na magonjwa mengine ya zinaa yanayo kumba Kenya kwa miaka mingi.

Virusi vya ukimwi vina sambazwa na kufanya mapenzi(ngono) na mtu alieambukizwa hivyo virusi bila kujikinga. Kwa vile waweza kuwa na virusi vya ukimwi na ukaoneka mwenya afya nzuri kwa miaka mingi, njia bora kujikinga na uambukizi na virusi hivyo ni kutofanya mapenzi (ngono), au kuwa na mpenzi mmoja ambaye amepimwa damu na kuthibitisha kwamba hana hivyo virusi. Na kama hivyo haiwezekani, ni muhimu zaidi kujikinga kwa kutumia mpira au kondomu wakati wote unapofanya mapenzi na mtu yoyote. Ukitumia kondomu jinsi unavyo takikana waweza kuzuia kuambukizwa magonjwa ya zinaa na hata ukimwi.

Kuwa na ugonjwa mwingine wa zinaa kama vile kisonono au kaswende, kunaongezea nafasi zaidi ya kuambukizwa virusi vya ukimwi. Wakati mwingine magonjwa ya zinaa husababisha vidonda vya uchungu, kutokwa na usaa kwenye ume au uchungu wakati unapokojoa. Walakini, wakati mwingine waweza kupata ugonjwa wa zinaa na ukose kujua kwa sababu hakuna dalili zinazoonekana. Ukijiunga na huu utafiti, tutachunguzwa magonjwa ya zinaa kwa kupima damu na mkojo wako, na utapewa ushauri na matibabu kama utahitaji kwa ugonjwa wowote utakao patikana. Pia tutapima damu kuangalia virusi vya ukimwi. Utapewa ushauri kabla ya kutolewa damu na baada ya kupewa majibi yako ili kama uko na maswali yoyote yanaweza kujibiwa na nurse au daktari wa kliniki. Majibu utapewa kwa njia ya siri. Kama majibu yako yanaonyesha una virusi vya ukimwi kuna madawa ya kupunguza makali yaani ARV ambayo yanapatikana nchini Kenya. Haya madawa hayatibu virusi, bali yanapunguza makali na kuzuia kutheufika kwa mwili. Virusi huishi kwa mwili maisha yote ya mtu. Siyo lazima kuanza kutumia hayo madawa wakati umeonekana na virusi, kama kinga ya mwili iko bado juu na afya ni nzuri, lakini kama kinga ya mwili iko chini itabidi uanze kutumia hayo madawa. Ukitaka kujua kama kinga yako iko hali gani na jinsi ya kupata hizo dawa utatumwa hospitali ya Coptic iliyo barabara ya Ngong au Mbagathi hospitali. Kama hutaki kujiunga na utafiti lakini ungependa kujua hali ya damu yako, utatumwa uende kwa kituo cha VCT Kilicho karibu nawe.

Sehemu nyingine ya muhimu ya huu utafiti ni utajaza karatasi ya maswali kadhaa juu yako, mpenzi wako (alieuambia juu ya mambo haya) na mpenzi au wapenzi wengine uliona. Haya maswali yanahusu mambo yako yakibinafsi kama vile njia tofauti za kufanya mpenzi (ngono), kama unatumia mpira (kondomu) na kama umeshapata dalili za magonjwa ya zinaa au virusi vya ukimwi.

Ukikubali kujiunga na huu utafiti, kwanza utapewa ushauri na utaulizwa kutolewa damu na kutupatia mkojo ili zipim we virusi na magonjwa ya zinaa. Majibu yatakuwa tayari wiki moja baadaye. Utapewa taraha yakuja kuchukua hayo majibu baada ya wiki moja au mbili. Utapewa ushauri zaidi na matibabu ya ugonjwa wa zinaa kama utahitaji. Utarudishiwa nauli uliotumia kwa kiwango cha shillingi mia moja na hamsini (150 Ksh) kwa vile matibabu ambayo utapewa hayatakukinga na kuambukizwa magonjwa ya zinaa au virusi vya ukimwi, ni muhimu kuendelea

kutumia kondomu kila mara unapofanya mapenzi (ngono) na mtu yeyote hata pia na mpenzi wako.

Hakuna hatari kujiunga na huu utafiti. Kiwango cha damu kitaka cho hitajika ni kidogo sana hakiwezi kuthuru afya yako. Watu wengine hupata maumivu kwenye mkono ambao sindano imetumiwa kutoa damu, lakini ni kwa muda kidogo. Majibu yako yote utayaonyeshwa na daktari au muuguzi au msauri ambaye atakuhudumia na yata hifadhiwa kwa siri kabisa. Majibu ya maswali ya karatasi yata hifadhiwa kwenye komputa na jina lako halitaonekana mahali popote. Tutatumia nambari ya siri ku kutambua, na hakuna mtu yeyote asiye shiriki kwa kazi hii ataweza kukutambua. Hakuna majibu yako ambayo yatapatiwa mpenzi wako aliekuleta kwa kliniki lakini waweza kumueleza wewe mwenyewe. Na hivyo, hivyo hatutaweza kukupatia majibu yake ila yeye mwenyewe anaweza kukueleza.

Faida muhimu utakayo pata kutokana na huu mradi ni uchunguzi na matibabu ya magonjwa ya zinaa bila malipo yoyote, ushauri na kupimwa damu kuchunguza virusi vya ukimwi bila malipo yoyote. **Ukionenkana una virusi utapewa barua kupata usaidizi zaidi huko hospitali ya Coptic ambayo ni kliniki inayo hudumia na kupeana dawa ya kupunguza makali ya virusi (ARV) tangu mwanzo wa mwaka huu (2005).**

Maelezo utakayo tupatia kupitia maswali utakayo jibu kwa usiri yata saidia zaidi kutafuta njia mwafaka yakukabiliana na hili janga la ukimwi, na kupunguza au kuzuia uenezaji wa virusi na magonjwa mengine ya zinaa nchini Kenya.

Kujiunga na mradi huu ni kwa hiyari yako mwenyewe na waweza kuondoka wakati wowote kama hutaki kuendelea. Lakini, itakuwa vyema kutuelezea kwamba unataka kutoka. Kama unakubali kujiunga na huu mradi, tafadhali weka sahihi yako ya makubaliano kwenye karatasi ambayo imeshikanishwa na maelezo haya.

Annex 4.3A: Invitation letter to FSWs RPs

FOMU YA MAELEZO KWA MSHIRIKI WA UTAFITI: MSHIRIKI WA KIKE
Tarehe ___/___/___ [siku(dd)/mwezi (mm)/ mwaka (yy)]

Chuo kikuu cha Nairobi na washiriki wengine wamefanya kazi ya kukabiliana na janga la ukimwi na magonjwa mengine ya zinaa yanayo kumba kenya kwa miaka mingi.

Waweza kuwa tayari umeshaambukizwa virusi vya ugonjwa wa ukimwi, na kama sivyo mienendo yako inakuweka kwenye hatari ya kuambukizwa virusi siku zijazo. Hii ni kwa sababu, baada ya mda, ukifanya ngono na watu wengi, uwezekano wa kuambukizwa virusi vya ukimwi na magonjwa mengine ya zinaa huongezeka zaidi. Njia kamili ya kujizuia kuambukizwa virusi ni kutofanya mapenzi, au kufanya mapenzi (ngono) na mpenzi mmoja ambae amepimwa damu na kuonekana hana virusi vya ukimwi. (Usifanye Mapenzi (ngono) au Uwe na mpenzi Mmoja), lakini hii haiwezekani kama wewe ni kahaba, kwa hivyo, ni muhimu zaidi kujizuia kuambukizwa kwa kutumia mipira (kondomu) wakati wote unapo fanya mapenzi (ngono) na mtu yeyote. Kondomu ikitumwiwa sawa sawa, yaweza kuzuia maradhi mengi ya zinaa na hata pia virusi vya ukimwi.

Kuwa na ugonjwa mwingine wa zinaa kama vile kisonono au kaswende, kuna ongezea nafasi zaidi ya kuambukizwa virusi vya ukimwi.

Wakati mwingine magonjwa ya zinaa yanampa mtu vidonda vilivyo na uchungu au kutokwa na majimaji ya uchafu kwenye njia ya kizazi au uke, na pia kuumwa na tumbo sehemu ya chini. Walakini, wakati mwingine waweza kupata ugonjwa wa zinaa na ukose kujua kwa sababu hakuna dalili zinazo onekana.

Kwa kujiunga na kliniki hii ya Majengo (ML) unapimwa damu kuangalia virusi na magonjwa ya zinaa mara mbili kwa mwaka, na ushauri na matibabu hupeanwa panapo onekana haja. Kwa sasa, matibabu ya magonjwa ya zinaa yanapewa kwa kliniki hii yetu. Lakini, dawa za kupunguza makali ya virusi (ARV's) yanapatikana kwa kliniki zingine na hivi karibuni mwaka huu 2005 tutaanza kuwapa wote watakapo hitaji huduma hiyo.

Ukijiunga au ukose kujiunga na utafiti huu wa mda mdogo (**utafiti na "mdosi"**) hauta zuia kuendelea na kliniki ya kawaida, na uta hudumiwa kama kawaida.

Kingine cha muhimu kwa utafiti huu nikwamba utajaza karatasi ya maswali kadha ambayo yanakuhusu wewe binafsi, mdosi wako na wateja wengine unaofanya mapenzi nao. Hayo maswali ni ya kibinafsi kuhusu watu tofauti unaoonana nao kimwili, kama unatumia mipira ya kondomu na kama unadalili zozote za ugonjwa wa zinaa au virusi vya ukimwi.

Ukikubali kujiunga na huu utafiti, utapewa ushauri, na utaulizwa utoe damu, mkojo na vimpimo vya njia ya kizazi vichunguzwe magonjwa ya zinaa na pia virusi vya ukimwi. Majibu yata kuwa tayari, baada ya wiki moja na utapewa tarehe ya kurudia majibu kwa kliniki baada ya wiki moja au mbili. Utapatiwa ushauri zaidi na matibabu kama utahitaji.

Hata kama majibu yako namna gani, ni muhimu kuendelea kutumia kondomu (mipira) kujikinga na kuambukizwa virusi au magonjwa ya zinaa baadaye. Tunakuomba pia umuulize mdosi wako aje kliniki kupimwa na kutibiwa kama ako na ugonjwa wowote wa zinaa.

Hakuna hatari yoyote kujiunga na utafiti huu. Kiasi cha damu kinachohitajika ni kidogo sana kuhatarisha afya yako. Lakini, watu wachache huumwa na sehemu ambayo damu imetolewa, kwenye mkono kwa muda mfupi.

Majibu ya damu yako na vipimo vya ugonjwa wa zinaa utapewa wewe, na dakatari, nurse au muuguzi, au mshauri wako. Napia yatawekwa kwa hali ya siri kabisa.

Majibu ya maswali ya karatasi yatahifadhiwa kwa komputa lakini jina lako halitaonekana. Tutatumia nambari ya siri kukutambulisha.

Maelezo yote utakayo tupatia yatawekwa kwa njia ya siri kabisa na hautaweza kutambuliwa na watu wengine wasiohusika na utafiti. Hakuna majibu yako yoyote yatakayo patiwa mdosi wako, lakini unaweza kumuelezea wewe mwenyewe ukipenda. Vile vile pia, hatutakueleza majibu ya mdosi wako, lakini anaweza kukuelezea yeye mwenyewe akipenda. Mkitaka kuelezeana majibu yenu mahali pamoja na usaidizi wa dakatari au mshauri, tunaweza kuwapangia nafasi hiyo kwa kliniki mkapata ushauri pamoja.

Faida muhimu utakayo pata kutakana na huu utafiti ni, kuchunguzwa na kutibiwa kwa magonjwa ya zinaa bila malipo yoyote; kupata ushauri na maelezo kuhusu virusi vya ukimwi wewe na mdosi wako. Utapata matibabu ya magonjwa mengine yale yanayoweza kutibiwa kliniki bila malipo yoyote.

Maelezo yote utakayo tupatia yatasaidia zaidi kutafuta njia mwafaka yaku kabiliana na hili janga la ukimwi. Na kupunguza au kuzuia uenezali wa virusi na magonjwa ya zinaa nchini Kenya.

Kujiunga na mradi huu ni kwa hiyari yako mwenyewe na unaweza kuondoka wakati wowote kama hutaki kuendelea, lakini itakuwa vyema kutuelezea kwamba unataka kutoka.

Kama unakubali kujiunga na huu msadi tafadhali weka sahihi yako ya makubaliano kwenye karatasi ambayo ime shikanishwa na maelezo haya.

Dr. Charles Wachih
Kenyatta National Hospital
Microbiology Annex
Tel: 0722-714406 OR 0735-21771/2714681 Email: cwachih@crstkenya.org

Annex 4.3B: Invitation letter to FSWs RPs - English

TO WHOM IT MAY CONCERN

Dear Sir, I am pleased to inform you of a very important study, which is focused on improving your health.

I am a Kenyan Doctor working at the University of Nairobi in the Department of Medical Microbiology. For the last several years, my colleagues and I have been involved in a numerous research projects with the intent of improving Kenyan people's health. From these studies findings, result, we have been able to create health programs, which address the Kenyan people's needs. Unfortunately, in the past, we have found our studies lack the necessary input from Kenyan men.

As a Doctor, I am disappointed that we men are not eager to participate in studies affecting our health. I believe Kenyan men are interested in their health. However, in the past, I believe researchers have not contacted men through the appropriate avenues. Furthermore, I think Kenyan men want to be informed and treated for health concerns. Previously, we have found that when people are aware of the motivations for a study, in this case, improving Kenyan men's health, we have found people to be more receptive. So I want to encourage and emphasis how important it is that you participate in this study.

Our study is conducted a medical clinic. It involves a short face-to-face interview at our study site, where we would greatly appreciate your assistance in filling a form. As well, if you are willing to be diagnosed, tested, and treated for any health ailments. Unless by your volition, everything discussed in our study will be confidential. This promise of confidentiality is irrespective of whether we treat for HIV, any STDs, or other personal health ailments. Furthermore, the earlier you are aware of any diseases, the sooner we will be able to treat you before it affects your well-being. Your reading this note to the end is highly appreciated. Your participation in this study will help us to address Kenyan men's health more effectively.

If you participate in this study, please remember any information from you:

1. Will be confidential and will not be associated with you in any way.
2. Will help us serve Kenyan men better
3. Will be highly appreciated

Sincerely,

Dr. Charles Wachihi

If you have any questions at all, please do not hesitate to contact me:

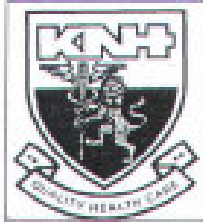
Dr. Charles Wachihi

Kenyatta National Hospital

Microbiology Annex

Tel: 0722-714406 OR 0735-21771/2714681 Email: cwachihi@crstkenya.org

Annex 4.4 : Ethics Approval – Kenyatta National Hospital



KENYATTA NATIONAL HOSPITAL

Hospital Rd. along, Ngong Rd.
P.O. Box. 20723, Nairobi.

Tel: 726300-9

Fax: 725272

Telegrams: "MEDSUP", Nairobi.

Email: knh@nbi.ispkenya.com

Ref: KNH-ERC/01/2805

Date: 16th June 2005

Dr. Rupert Kaul
Department of Medicine
Clinical Sciences Division
University of Toronto
CANADA

Dear Dr. Kaul

**RE: RESEARCH PROPOSAL : "BRIDING POPULATIONS IN THE KENYAN HIV EPIDEMIC: SEXUAL NETWORKING BY REGULAR CLINETTS OF FEMALE SEX WORKERS"
(P72/5/2005)**

This is to inform you that the Kenyatta National Hospital Ethics and Research Committee has reviewed and **approved** your above cited research proposal for the period 16th June 2005 to 15th June 2006. You will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given.

On behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

This information will form part of database that will be consulted in future when processing related research study so as to minimize chances of study duplication.

Yours sincerely,


PROF. A. N. GUANTAI
SECRETARY – KNH-ERC

c.c: Prof. K. M Bhatt, Chairperson, and KNH-ERC
The Deputy Director (C/S), KNH
The Dean, Faculty of Medicine, UON
Co-Investigators; Dr. Charles Wachihi
Dr. Walter Jaoko

Annex 4.5: FSW Questionnaire

QUESTIONNAIRE: FEMALE PARTICIPANTS /

MASWALI: MHIRIKI WA KIKE

Date/ Tarehe: ____ / ____ / ____
(dd/mm/yy)

→DATE_ML

ML Clinic Number/Numbari ya kliniki ML _____

→MLNUM

RP Clinic Number _____

→RPNUMML

**TO AVOID CONFUSION, YOUR PARTNER ENROLLED IN THIS STUDY WILL BE REFERED TO AS YOUR REGULAR PARTNER (BOYFRIEND).
ILIKUZUIA KUCHANGANYIKIWA, MWANAUME AMBAYE UTAMLETA KWA UTAFITI HUU TUTAMTAMBUA KAMA MDOSI WAKO.**

DEMOGRAPHICS/MASWALI YA KUJITAMBULISHA:

1a. Date of Birth/ Tarehe ya kuzaliwa ____ / ____ / ____ [dd/mm/yy] →DOBML

1b. Age/Umri _____(Years/miaka) →AGEML

2a. Nationality/ Nchi ya kuzaliwa _____

→NATML

2b. Ethnic origin/ Kabila _____ →ETHML

2c. Currently, where do you live? (District, City, Province, Country)

Unaishi wapi kwa sasa ? (wilaya, mji) _____ →CITML

3. Number of Completed School Years/Umesoma shule kwa miaka mingapi?

→SCH_ML

1= None/ Hakuna 2= Lower Primary (1-3)/ Shule ya msingi (darasa 1-3)

3= Upper Primary (4-8)/ Shule ya msingi (darasa ya nne hadi nane)

4= High School (Form 1-4)/ Shule ya sekondari /upili

5= College/ Chuo kikuu

4. Marital status/ Hali ya kuolewa

→MARIT_ML

1= Never married, live alone/ Bado kuolewa, unaishi peke yako

2= Never married, live with partner/ Bado kuolewa unaishi na mwanaume

3= Married/ Umeolewa

4= Widowed/Divorced/Separated / Mjane/umetalakiwa/mmetengana na mumeo

IF NOT MARRIED, GO TO Q5. KAMA HUJAOA ENDELEA NA SWALI 5

4a. If married, is your husband living with you in the same household? →HUSB_LV

Kama umeolewa, mumeo anaishi nawe nyumba moja? 1=Yes/Ndiyo

2=No/La

4b. Is your husband the same person as the regular partner enrolled in this study?

Mumeo ndiye huyu mdosi wako ambaye anajandikisha kwa utafiti huu? →HUSB_RP

1=Yes/Ndiyo 2=No/La

5. Number of dependants that you support/ Unategemewa na watu wangapi?

→NUM_DEP

1. Number of Children/ Watoto ni wangapi? _____ →NUM_CHIL

2. Number of Family Members (including your extended family up country) _____

Mukowangapi kwa familia yenu pamoja na wake wako mashambani →NUM_FM

6. Age at first sex (Yr)/Umri wako ulipofanya ngono (mapenzi) mara ya kwanza

→ML_AGESX

7. Duration of prostitution/ Miaka ya kazi ya ukahaba Mos: ____ Yrs: _____
→**DUR_FSW**

8a. Still practicing sex work?/ Unaendelea na ukahaba? →**STL_FSW**
1=Yes/ Ndiyo 2=No/ Hapana

8b. If no, why?/ Kama hapana, ni kwa nini? →**Y_NOFSW**

IF NO, GO TO Q13. KAMA JIBU NI LA, ENDELEA NA SWALI LA 13.

9. Do you travel to different locations to practice sex work? →**LOC_SW**
Unasafiri mahali mbali mbali kufanya kazi ya ukahaba?

1=Yes/ Ndiyo 2=No/ Hapana

IF NO, GO TO Q10. KAMA JIBU NI LA, ENDELEA NA SWALI LA 10.

9a. If yes, please list all locations (district, city, outside of Nairobi) Probe and Record all answers. →**LOC_LIST**

Kama ndiyo, andika mahali pote (mkoa, mji, inje ya Nairobi) chunguza na uandike majibu yote.

10. Where do you seek out clients (Check all that apply) →**SEEK_MN**

Wewe hutafuta wapi wateja wako? (Wekaalama kwa majibu sawa na wewe)

1=Home/ Nyumbani

2= Bar/restaurant / Kwenye bar au mikahawa

3= Nightclub / Vilabuni vya usiku

4=Other (Specify) / Mahali kwingine kama

11. In the last week, how many different sexual partners did you have? (including regular partner) → **NUM_WK**

Wiki iliopita, umekuwa na watu wangapi umefanya nao mapenzi(ukihe sabu pia mdozi)? _____

12. Average charge per sexual act ? (Ksh.) _____ →**SEX_KSH**

Unalipisha pesa ngapi kwa kila kitendo cha mapenzi (Ksh)

12a. Last month, how much did you earn from prostitution? →**SXKSH_MO**

Mwezi uliopita, uliopita pesa ngapi kwa kazi ya ukahaba?

1=Less than 5000 Ksh/ Chini ya Shilingi elfu tano

2= 5000-9,999 Ksh/ Kati ya Shilingi elfu tanona elfu kumi

3= 10,000-14,999 Ksh/ Kati ya Shilingi elfu kumi na elfu kuminatano

4=15,000- 20,000 Ksh/ Kati ya Shilingi elfu kuminatano na elfu ishirini

5= Greater than 20,000 Ksh/ Zaidi ya Shilingi elfu ishirini

→**SX_AVG**

12b. Is this reflective of your average income per month from prostitution?

Pesa ulizo taja, zinasimamia jumula ya kiasi cha pesa unazopata kwa mwezi kutokana kazi ya ukahaba?

1=Yes/ Ndiyo 2=No/ La

→**Y_SXAVG**

12c. If no, why? (ie. Is it usually more or less) / Kama ni la, mbona (Kawaida ni zaidi au kidogo)?

13. Do you have another part-time job (s)? →**OTH_JB**

Unafanya kazi yoyote nyingine au kibarua?

1=Yes/ Ndiyo 2=No/ Hapana

IF NO, GO TO Q14. KAMA JIBU NI LA, ENDELEA NA SWALI LA 14.

13a. If yes, could you please list these jobs and locations?

Kama jibu ni ndiyo, tafadhali ziandike chini hizo kazi na mahali unapofanyia?

Job1: _____ Location: _____

Job2: _____ Location: _____

Job3: _____ Location: _____

→**JB_LIST**

13b. On average, how much do you earn per month from your other job(s) (Ksh)?

Unapata pesa ngapi kwa hizo kazi zingine?

→**JB_KSH**

1=Less than 5000 Ksh/ Chini ya Shilingi elfu tano

2= 5000-9,999 Ksh/ Kati ya Shilingi elfu tano na elfu kumi

3= 10,000-14,999 Ksh/ Kati ya Shilingi elfu kumi na elfu kuminatano

4=15,000- 20,000 Ksh/ Kati ya Shilingi elfu kuminatano na elfu ishirini

5= Greater than 20,000 Ksh/ Zaidi ya Shilingi elfu ishirini

INFORMATION ABOUT YOUR REGULAR PARTNER (BOYFRIEND)

MAELEZO JUU YA MDOSI WAKO

14. What is your definition of regular partner or boyfriend?

→**DFN_RP**

Mtu ambaye unamchukuwa kama mdosi wako ni mtu wa ina gani?

14a. What is your regular partner's occupation?/ Mdosi wako anafanya kazi gani?

→**MLRP_JOB**

15. How long have you been together with your regular partner, who is enrolled in this study?

→**TIM_WRP**

Ni kwa muda gani umekuwa pamoja na mdosi wako?

Mos: _____ Yrs:

16. Has your regular partner who is enrolled in this study, ever paid you for sex?

Je mwenzako ambaye yuko kwenye hii staid, amewahi kukulipa sababu ya ngono?

1=Yes/Ndiyo 2=No/La →**EVRPKSH**

IF NO, GO TO Q19. KAMA JIBU NI LA, ENDELEA NA SWALI LA 19.

17. Was your regular partner (boyfriend) at one-time a repeat customer or a first-time client?

→**RCBCMRP**

Mdosi wako hapo mbelani alikuwa kastoma wako au mulikutana mara ya kwanza na akawa mdosi?

1=Yes/Ndiyo 2=No/La

18. Currently, does your regular partner pay you for sex?

→**STILLPAY**

Kwa wakati huu, mwenzako hukulipa sababu ya ngono?

1=Yes/Ndiyo 2= No/La

IF NO, GO TO Q19. KAMA JIBU NI LA, ENDELEA NA SWALI LA 19.

18a. If yes, how often does he pay you for sex? (Please read all options)

Kama yeye hulipa ni mara ngapi yeye hulipa?

→**OF_RPKSH**

1=Never/ Hukutumia (0%)

2= Rarely/ Wakati mchache zaidi (1-24%)

3=Sometimes/ Wakati mwingine (25-49%)

4= Often/ Wakati mwingi zaidi (50-74%)

5= Almost Always/ Karibu wakati wote (75-99%)

6=Always/ Wakati wote kabisa (100%)

18b. On average, how much does he pay you for sex (Ksh)? _____ →**AV_RPKSH**
Kwa kawaida yeye hukulipa pesa ngapi?

19. From your knowledge, do you know whether your regular partner has ever paid for sex /Vile unafahmu mwenzako amewahi kulipa pesa kwa sababu ya ngono?

1=Yes/Ndiyo 2=No/La 3= Don't know/Sijui

IF NO, GO TO Q20. KAMA JIBU NI LA, ENDELEA NA SWALI LA 20.

→**EV_RPFSW**

19a. From your knowledge, currently, do you know whether your regular partner pays for sex? / Kulingana na vile unavyojahamu kwa sasa, mwenzako hulipia ngono?

1=Yes/Ndiyo 2=No/La 3=Don't know/Sijui→ **STLRPKSH**

20. Have you disclosed to your regular partner that you are a sex worker

Umesha muambia mdosi wako kuwa wewe ni kahaba?

→**DSCL_FSW**

1=Yes/Ndiyo 2=No/La

20a. If no, why?/ Kama hapana, ni kwa nini?

→**Y_NOTFSW**

20b. If no, what type of occupation does your regular partner believe you do?

Kama huwa halipi, yeye hufukiria ni kazi gani unafanya?

→ **RP_MLJOB**

21. Do you have other regular partners (boyfriends)?

→**OTRP**

je, una wapenzi wengine kando ya huyu?

1=Yes/Ndiyo 2=No/La

IF NO, GO TO Q24. KAMA JIBU NI HAPANA/LA, ENDELEA NA SWALI LA 24

21a. If **yes**, how many?/ Kama jibu ndiyo, wako wangapi?_____

→**NM_OTRP**

22. Do you think any of them would be willing to participate in this study?

Je, kuna yeyote ambaye anaweza kukubau kuwa kwenye staid hii? →**PRTC_RP**

1=Yes/Ndiyo 2=No/La 3=Don't know/Sijui

22a. If so, how many?/ Kama kunaw ni ngapi? _____

→**NM_PRTC**

23. Out of those other regular partners (boyfriends), do any of them pay you for sex?

Kati ya wale wapenzi wengine kuna yule ambaye hukulipa sababu ya ngono?

1=Yes/Ndiyo 2=No/La

→**PAY_OTRP**

23a.If yes, how many?/ Kama kunao no wangapi? _____

→**NM_PAYRP**

23b.How many of these regular partners started their sexual relationships with you as one-time or repeat clients? / Ni wangapi kati ya hawa wapenzi wako ambao walianza ngono nawe mara moja tu au ni wamazoea?_____

→**NMBCM_RP**

24. Is your regular partner married to someone other than you? →**RP_MRD**

Mdosi wako ako na bibi mwingine mbali na wewe?

1=Yes/Ndiyo 2=No/La

29. During sexual intercourse, do you have other sexual partners who do not use condoms consistently with you? Ie. Sexual partners who either never, rarely, or sometimes with you? (Please show the scale)

Una wapenzi wengine ambao hawatumii kondomu wakati wa ngono?

1=Yes/Ndiyo 2=No/La

IF NO, GO TO Q29D. KAMA JIBU NI LA, ENDELEA NA SWALI LA 29D

→**OTRPNOC**

29a. If so, how many?/ Wanagapi hawatumii kondomu? _____ →**NUM_NOCD**

29b. Are these the same sexual partners whom you consider paying regular partners? →**SM_P_RP**

Hawa ni wale wapenzi ambao hukulipa kila mara mmekuwa na ngono

1=Yes/Ndiyo 2=No/La

29c. If no, or if not all of them are the same sexual partners, can you describe what makes them different? / Kama wapenzi wako wote sio sawa, ni nini kinajanya wawe tafauti? →**NSM_DCR**

29d. What are the factors which influence you and your partner not to wear condoms?

(Please read out all options and check all that apply)

Ni nini unafanya wewe na mwenzako kutotumia kondomu (Changua ikufaayo)

1= You trust him/them / Unamuamini

2= You have known him/them for a long-time / Umemuja kwa mda miefu

3= He/They prefer(s) to have sex without a condom (Probe for a reason):

Anapenda ngono bila kondomu _____

4= You prefer to have to have sex without a condom: (Probe for reason):

Unapenda ngono bila kondomu _____

5= Both of you prefer to have sex without a condom: (Probe for reason):

Nyote mnapenda ngono bila kondomu _____

6= You are trying to get pregnant/ Unataka kushika mimba

7= You know he is HIV negative or you know his status/ Unajua hali yake ya virusi vya ukimwi

8= Other (Please specify)/ Zababu zinginezo

30. Does violence or the threat of violence influence your ability to negotiate condom use with your regular partner?/ Kupigwa au kuogopa kupigwa kunachangia uwezo wako kuuliza mdosi wako ku

1= Yes/Ndiyo 2= No/La

→**VIOL_CD**

31. How does your regular partner support you? (Please check all that apply)

→**SUPT_ML**

Unasaidiwa na huyu mdosi wako na njia gani?

1= Monthly Allowance/ Pesa kila mwezi

3= School Fees/Karo ya shule

5= Lodging/ Malipo ya chumba cha kukodesha

7= Other (Please Specify)/ Njia zinginezo (zitaje)

2= Food/Chakula

4= Rent/Kodi ya Nyumba

6= Household Items

i) Casual Clients (First-time clients)/ Mpita njia

→CC_CDSDM →CCNCDSDM

- 1=Never/ Huvai(0%) 2= Rarely/ Wakati mwingine (1-24%)
3=Sometimes/ Wakati mwingine (25-49%) 4= Often/ Wakati mwingi zaidi (50-74%)
5= Almost Always/ Karibu wkati wote (75-99%)
6=Always/ Wakati wote kabisa (100%)
If never, why?/ Kama hapana, ni kwa nini?
-

ii) Paying Regular Clients (Repeat Customers)/ Kastoma

→RC_CDSDM →RCNCDSDM

- 1=Never/ Huvai(0%) 2= Rarely/ Wakati mwingine (1-24%)
3=Sometimes/ Wakati mwingine (25-49%) 4= Often/ Wakati mwingi zaidi (50-74%)
5= Almost Always/ Karibu wkati wote (75-99%)
6=Always/ Wakati wote kabisa (100%)
If never, why?/ Kama hapana, ni kwa nini?
-

iii) Regular Partner (Husband/Boyfriend/Lover)/ Mdosi →RP_CDSDM

→RPNCDSDM

- 1=Never/ Huvai(0%) 2= Rarely/ Wakati mwingine (1-24%)
3=Sometimes/ Wakati mwingine (25-49%) 4= Often/ Wakati mwingi zaidi (50-74%)
5= Almost Always/ Karibu wkati wote (75-99%)
6=Always/ Wakati wote kabisa (100%)
If never, why?/ Kama hapana, ni kwa nini?
-

37. Have you **ever** practiced **anal sex** with **the following groups**? (Please check all that apply)/ Umeshawahi kufanya ngono/mapenzi kw mkunu na_____?

→CC_EVAS →RC_EVAS

→RP_EVAS

Casual Clients (First-time clients)/ Mpita njia

[] Yes/ Ndiyo [] No/ Hapana

Paying Regular Clients (Repeat Customers)/ Kastoma

[] Yes/ Ndiyo [] No/ Hapana

Regular Partner (Husband/Boyfriend/Lover)/ Mdosi

[] Yes/ Ndiyo [] No/ Hapana

IF NO FOR ALL, GO TO Q39. KAMA LA KWA ZOTE ENDELEA NA SWALI LA 39.

38. How **often** would the **following groups** wear **a condom** when engaging in anal sex? (Please answer all that apply). / Ni wakati gani atavalia kondomu mukifenya mapenzi kwa mkundu? (Jibu yote yanayo kuhusu)

i) Casual Clients (First-time clients)/ Mpita njia

→CC_CDAS

→CCNOCDAS

- 1=Never/ Huvai(0%) 2= Rarely/ Wakati mwingine (1-24%)
3=Sometimes/ Wakati mwingine (25-49%) 4= Often/ Wakati mwingi zaidi (50-74%)
5= Almost Always/ Karibu wkati wote (75-99%)
6=Always/ Wakati wote kabisa (100%)
If never, why?/ Kama hapana, ni kwa nini?
-

41. Have you **ever** had sex with a casual client or repeat client who had **visible ulcers** or **sores on the penis**? / Umeshawahi kufanya mapenzi na mtu alien a vidonda kwenye ume wake ambavyo vinaoneka?

1=Yes/Ndiyo
2=No/La→**SX_CCRCG**

IF NO, GO TO Q42. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 42.

41a. If yes, did your partner wear a condom? →**CCRCG_CD**
Kama ndiyo, mdosi alivalia kondomu? 1=Yes/Ndiyo 2=No/La

41b. If yes, did you wear a condom? →**CCRCGFCD**
Kama ndiyo ulivoa kondomu? 1=Yes/Ndiyo 2=No/La

42. In the **past year**, have you had a **genital ulcer** or **sore**? →**YRG_ML**
Kwa muda wa mwaka uliopita, umewahi kupata vidonda au uvimbe kwa ume wako?
1 =Yes/Ndiyo 2=No/La

IF NO, GO TO Q43. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 43.

42a. If **yes**, did you continue to have sex? →**MLSX_GU**
Kama jibu ni ndiyo, uliendelea kufanya mapenzi? 1=Yes/Ndiyo 2=No/La

42b. If yes, did your partner wear a condom? →**SXGU_CD**
Kama ndiyo, mdosi alivilia kondomu? 1=Yes/Ndiyo 2=No/La

42c. If yes, did you wear a condom? →**SXGUFCD**
Kama ndiyo, ulivoa kondomu? 1=Yes/Ndiyo 2=No/La

43. In the **past year**, did you have an **STD**?
→**YRSTD_FSW**

Umeshawahi kupata ugonjwa wa zinaa mwaka uliopita? 1=Yes/Ndiyo 2=No/La

IF NO, GO TO Q44. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 44.

43a If yes, could you please describe the symptoms?/ Kama jibu ni ndiyo, eleza dalili ulizopata
→**FSW_SYMP**

43b. If **yes**, did you continue to have sex?
→**STDFSW_SX**

Kama jibu ni ndiyo, uliendelea kufanya mapenzi? 1=Yes/Ndiyo 2=No/La

43c. If yes, did your partner wear a condom?
→**STDRPWCD**

Kama ndiyo, mdosi alivalia kondomu? 1=Yes/Ndiyo 2=No/La

43d. If yes, did you wear a condom? →**STDSWFCD**
Kama ndiyo, ulivoa kondomu? 1=Yes/Ndiyo 2=No/La

43e. Where did you seek treatment for your STD?/ Ulipata dawa ya kutibu ugonjwa wa zinaa wapi?

1= Pharmacy (Self-Diagnosed & Treated)/ Duka la dawa (Ukajitibu) →**MLSTDTRT**

2= Herbal Doctor & Medicine/ Dawa ya miti shamba

3= Government Clinic/ Kliniki ya serikali

4= Private Clinic/ Kliniki ya kibinafsi

5= Majengo Women's Clinic

6= No Treatment/ Hakuna matibabu

7= Other(Please Specify)/ Zinginezo (Zipi?) _____

44. Has your regular partner **ever** gotten tested for HIV/AIDS? →**MLRPTST**
Mdosi amesha pimwa damu kuangalia virusi vya ukimwi?
1=Yes/Ndiyo 2=No/La 3= Don't know/Sijuii

IF NO/DON'T KNOW, GO TO Q45. KAMA JIBU NI LA/SIJUII, ENDELEA NA SWALI LA 45.

44a. Did he disclose to you his status? 1= Yes/Ndiyo 2=No/La →**RPDSCLML**
Alikuambia hali ya damu yake?

44b. What is his status?/ Je hali yake ni ipi? →**HIVRP**
1= Pos 2=Neg 3= Don't know/Sijuii

45. What is your HIV status?/ Hali yako ya virusi vya ukimwi ni ipi? →**HIVML**
1=HIV Positive 2=HIV Negative 3=Don't know/Sijuii

45a. Have you disclosed your HIV/AIDS status to him? →**MLNODSCL**
Umeshamwambia hali ya damu yako wewe? 1= Yes/Ndiyo 2=No/La
→**MLDSCLRP**

45b. If no, why?/ Kama jibu ni la kwa nini?

46. What is your motivation to participate in this study? →**MLMOTIV**
Ni nini hasa ilikuwezesha kuja kufiunga na utafiti huu?

OTHER RISK FACTORS/HATARI ZINGINEZO

46. In the past year, have you ever NOT used condoms because you were _____ (Please check all that apply) →**ALL_CD**

1= Drunk/ Ulevi

2=Under the influence of drugs/ Kutumia dawa za kulevya

3= Afraid of being assaulted or abused by your casual client/ Kuogaopa kupigwa na mteja mpita njia

4= Afraid of being assaulted or abused by your regular client/ Kuogopa kupigwa na kastoma

5= Afraid of being assaulted or abused by your regular partner/ Kuopogopa kupigwa na mdosi

6= Other (Please specify)/ Sababu zinginezo (eleza)

47. In the **last year**, did anyone – paying or otherwise – force you to have sex with him when you didn't want to? / Kwa muda wa mwaka uliopita mteja wakulipa au mtu yeyote mwingine ame sha wahi kukulazimisha kufanya mapenzi bila wewe kupenda? 1=Yes/Ndiyo 2=No/La →**FORCE_SX**

47a. If yes, how many times/ Kama ndiyo mara ngapi?: ____ →**NM_FORCE**

48. Have you **EVER** used intravenous drug use? →**ML_IDU**
Umeshawahi kutumia madawa ya kulevywa ya kudunga shindano kwa mishipa?
1=Yes/Ndiyo 2=No/La

49. How **much** alcohol do you drink?/ Unakunywa pombe kiasi gani? →**ML_DRNK**

1= never/ Haukunywi

2= 1-2 drinks/week / Kinuwaji moja au mbili 1-2 kwa wiki

3= 3-6 drinks/week / Kinywaji 3-6 kwa wiki

4= 1-4drinks /day / Kinywaji 1-4 kwa siku

5= more than 4 drinks /day / Zaidi ya vinywaji 4 kwa siku

**THIS IS ALL I NEED TO ASK YOU.
 HIVI NDIYO NILITAKA KUKUULIZA
 DO YOU HAVE ANY QUESTIONS THAT YOU WOULD LIKE TO ASK ME?
 UNA SALI LOLOTE UNGEPENDA KUNIULIZAU?
 THANK YOU VERY MUCH!
 AHSANTE SANA!**

**LABORATORY
 CULTURE**

50. Trichomonas	1=Pos	2=Neg	3= ND (In Pouch)	→ ML_TRIC
51. CT PCR	1= Pos	2= Neg	3=ND (URINE)	→
ML_CTPCR				
52. GC PCR	1=Pos	2=Neg	3=ND (URINE)	→
ML_GCPCR				
53. GUD SWAB	1=Pos	2= Neg	3=ND (ONLY IF ULCER)	

→**ML_ULSWB**

PLASMA TUBE #1

54. RPR 1=Neg 2=1:1 3=1:2 4=1:4 5=1:8 6=1:16 7=1:32 8=>1:32
 9=ND

→ **ML_RPR**

55. TPHA 1=Neg 2=1+ 3=2+ 4=3+ 5=4+ 6=ND

→ **ML_TPHA**

56. HIV ELISAI 1=Neg 2=Pos 3=Indeterminate 4=ND

→**ML_E1HIV**

57. HIV ELISA2 1=Neg 2=Pos 3= indeterminate 4=ND

→**ML_E2HIV**

58. 2nd PLASMA TUBE FROZEN [] Yes [] No
 Box Number _____
 Position _____

→**ML_PLSTB**

→**ML_TBBOX**

→**ML_TBPOS**

5. The Highest Number of Completed School Years/ Miaka uliomaliza ya shule
 1= None/ Hakuna →SCH_RP
 2= Lower Primary (1-3)/ Shule ya msingi (darasa 1-3)
 3= Upper Primary (4-8)/ Shule ya msingi (darasa ya nne hadi nane)
 4= High School (Form 1-4)/ Shule ya sekondari /upili
 5= College/ Chuo kikuu

OCCUPATION & MIGRATION/ KAZI NA MAKAAZI YAKO:

6. If you are working, what is your job?/ Kama umeajiriwa, kazi yako ni gani?
 _____ →JB_RP

IF A BUSINESSMAN, PLEASE PROMPT FURTHER TO ASK WHAT TYPE OF BUSINESSMAN. KAMA ANAFANYA BIAHARA ULIZA NI BIAHARA GANI ANAFANYA.

- 6a. What is your regular partner's occupation? →JB_ML

_____ Mteja wako wa kila siku hufanya kazi gani?

IF A BUSINESS WOMAN, PLEASE PROMPT FURTHER TO ASK WHAT TYPE OF BUSINESS WOMAN. KAMA ANAFANYA BIAHARA ULIZA NI BIAHARA GANI ANAFANYA

7. On average how much do you earn per month (Ksh)?/ Kwa mwezi unapata kiwango gani cha pesa? →JBKSH_RP

- 1=Less than 5000 Ksh/ Chini ya Shilingi elfu tano
 2= 5000-10,000 Ksh/ Kati ya Shilingi elfu tanona elfu kumi
 3= 10,000-15,000 Ksh/ Kati ya Shilingi elfu kumi na elfu kuminatano
 4=15,000- 20,000 Ksh/ Kati ya Shilingi elfu kuminatano na elfu ishirini
 5= Greater than 20,000 Ksh/ Zaidi ya Shilingi elfu ishirini

8. Do you ever travel outside Nairobi and stay away overnight?
 Unasafiri nje ya mji wa Nairobi na kukaa huko kwa muda? →TRV
 [] Yes/Ndiyo [] No/La

IF NO, GO TO Q10. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 10

9. Why do you travel? / Wewe husafiri kwa sababu gani?

- _____ →Y_TRV
 →FREQ_TRV
 9a. How often do you travel?/ Unasafiri mara ngapi?
 1= Daily/Kila siku 2= Weekly/ Kila wiki 3=Monthly/ Kila mwezi
 4= Once in a while/ Mara moja moja

- 9b. Where do you generally travel?/ Wewe husafiri ukienda wapi? →LOC_TRV
 1= Within the city/town/village / Hapa mjini/mtaa/kijijini

_____ 2= Within the District / Hapa Tarafa

_____ 3= Within the State/Province/ Mkoa

_____ 4= Out of Country / Nnje ya nchi

**SEXUAL BEHAVIOR WITH REGULAR PARTNER
TABIA ZA KIMAPENZI NA MPENZI WAKO**

10. How long have you been together with your regular partner ? →TIM_WML

Umekuwa pamja kwa muda gani na huya mpenzi wako?

Months/ Miezi: _____ Years/ Miaka: _____

11. How often do you have any kind of sex (vaginal, oral, anal) with your regular partner ? (Read out the following. Circle one answer only.) →OFT_SXML

Ni Mara ngapi unafanya mapenzi yoyote(uke, mdomo, mkundu) na mpenzi huyu wako? (Jibu moja tuu)

1= Less than one time per month/ Chini ya mara moja kwa mwezi

2=1-5 times per month/ Mara 1-5 kwa mwezi 3= 6-10 times per month/ Mara 6-10 kwa mwezi

4=11-20 times per month/ Mara 11-20 kwa mwezi

5=Greater than 20 times per month/ Zaidi ya mara 20 kwa mwezi

12. Do you use a condom with your regular partner ? [] Yes/ Ndiyo [] No/ Hapana
Unatumia kondomu na mpenzi wako wa kawaida? → RPUSECD

12a. If yes, is it/ Kama ndiyo, ni gani?

→TYP_CD

1=Male Condom/Ya Wanaume 2= Female Condom/ Ya Wamaume

3= Both Male & Female Condom/ Zote wanaume nay a wanawake

→ Y_RPNOCD

12a. If no, why?/ Mbona hautumii kondomu

IF NO, GO TO Q14. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 14.

13. How often do you use a condom (circle one) with regular partner? →OFT_CND

Ni mara ngapi unatumia kondomu na mpenzi huyu wako (Chagua jibu moja)?

1=Never/ Hukutumia (0%)

2= Rarely/ Wakati mchache zaidi (1-24%)

3=Sometimes/ Wakati mwingine (25-49%)4= Often/ Wakati mwingi zaidi (50-74%)

5= Almost Always/ Karibu wakati wote (75-99%)

6=Always/ Wakati wote kabisa (100%)

13a. If never, why ? Kama jibu ni havi/la, ni kwa nini?

→Y_NO_CND

14. Does your regular partner **ask** you **regularly** to wear a condom during vaginal sex?

Huyu mpenzi wako, hukuuliza kila mara kuvalia kondomu kabla ya kufanya mapenzi kwa uke?

→MLY_CND

[] Yes/Ndiyo [] No/La [] Sometimes/ Wakati mwingine

IF NO, GO TO Q15. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 15.

14a. If **yes**, do you **wear a condom** when asked? / Kama jibu ni ndiyo, wewe huvalia kondomu akikuuliza?

→RP_WEARC

[] Yes/Ndiyo [] No/La [] Sometimes/ Wakati mwingine

14b. If **no**, why? / Kama jibu ni hapan, ni kwa nini?

→RP_NWEAR

15. In during the course of your relationship, has your regular partner **ever** practice **oral sex** (fellatio) on you? / Mpenzi wako huyu, nufanya mapenzi ya mdomo kwako? →EVR_MLOS

Yes/ Ndiyo No/ Hapana

IF NO, GO TO Q16. KAMA JIBU NI HAPANA, JIBU SWALI LA 16.

15a. If **yes**, how often would you **wear a condom**?/ Kama ndiyo, ni mara ngapi unavalia kondomu?

1=Never/ Huvai (0%) 2= Rarely/ Wakati mchache zaidi (1-24%)
3=Sometimes/ Wakati mwingine (25-49%) 4= Often/ Wakati mwingi zaidi (50-74%)
5= Almost Always/ Karibu wakati wote (75-99%)
6=Always/ Wakati wote kabisa (100%) →OS_OFTCD

15b. If never, why?/ Kama Huvai, ni kwa nini?

→ OS_NVRCD

15c. Does your regular partner still practice oral sex (fellatio) on you?

Yes/ Ndiyo No/ La

→ OS_STILL

15d. When was the last time? _____

→ OS_LST

16. While your regular partner **is menstruating** (on her period), have you **ever** had **vaginal sex** with her ? / Wakati mpenzi wako anaona damu ya mwezi (period), ume wahi kufanya mapenzi ya uke naye?

Yes/ Ndiyo No/La

→EVR_MLMS

IF NO, GO TO Q17. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 17

16a. If **yes**, how **often** would you wear **a condom**?/ Kama jibu ni ndiyo, ni mara ngapi umevalia kondomu?

1=Never/ Huvai (0%) 2= Rarely/ Wakati mchache zaidi (1-24%)
3=Sometimes/ Wakati mwingine 4= Often/ Wakati mwingi zaidi
5= Almost always/ Karibu Wakati wote (75-99%)
6=Always/ Wakati wote kabisa (100%)

→ MS_OFTCD

16b. If **never**, why?/ Kama Huvai, ni kwa nini ?

→ MS_NVRCD

16c. Do you still practice vaginal sex with your regular partner, while she is menstruating? Yes/ Ndiyo No/La

→ MS_STILL

16d. When was the last time? _____

→ MS_LST

17. Have you **ever** had **anal sex** with your regular partner?

Umewani kufanya mapenzi ya njia ya haja kubwa na huyu mpenzi wako?

Yes/Ndiyo No/La

→EVR_MLAS

IF NO, GO TO Q18. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 18.

→AS_OFTCD

17a. If **yes**, how **often** would you wear **a condom**? / Kama ndiyo, ni mara ngapi utavalia kondomu?

1=Never/ Huvai (0%) 2= Rarely/ Wakati mchache zaidi (1-24%)
3=Sometimes/ Wakati mwingine 4= Often/ Wakati mwingi zaidi
5= Almost always/ Karibu Wakati wote (75-99%)
6=Always/ Wakati wote kabisa (100%)

17b. If never, why? / Kama huvai, ni kwa nini? _____ → **S_NVRCD**
→ **AS_STILL**

17c. Do you still practice anal sex with your regular partner?
[] Yes/Ndiyo [] No/La

17d. If yes, when was the last time? _____ → **AS_LST**

18. How do you support your regular partner? (Please check all that apply)

→ **RP_SUPML**

Unamsaidia huyu mpenzi wako na njia gani?

1= Monthly Allowance/ Pesa kila mwezi

2= Food/Chakula

3= School Fees/Karo ya shule

4= Rent/Kodi ya Nyumba

5= Lodging/ Malipo ya chumba cha kukodesha

6= Household & Toiletries

Items

7= Other (Please Specify) _____

SEXUAL NETWORKING/ MAPENZI NA WANAWAKE WENGINE

→ **RP_AGSX**

19. Age at first sexual intercourse?/Ulikuwa na umri gani ulipofanya mapenzi mara ya kwanza

1= Below 13/ Chini ya 13

2= 13-15/ Kati ya 13-15

3= 16-18/ Kati ya 16-18

4= Over 18/ Baada ya kuhitimu miaka kumi na nane

20. How many lifetime sexual partners have you had?

→ **LFSX_PTS**

Umekuwa na wanawake wangapi umefanya mapenzi nao maishani mwako?

1= Less than 5/ Chini ya watano

2= 5-10 Katiya watnana na kumi

3= 11-15 Katiya kumi na kaminatano

4= 16-20 Katiya kuminatano na ishirini

5= Greater than 20/ Zaidi ya ishirini

21. Have you **ever** had **more than one sexual relationship** at the same time?

Umeshawahi kuwa na zaidi ya mpenzi mmoja kwa wakati mmoja?

→ **EVR_CN**

[] Yes/Ndiyo [] No/La

IF NO, GO TO Q23. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 23.

21a. If so, with how many women?/ Kama jibu ni ndiyo, umekuwa na wanawake wangapi? _____

→ **NMCN_EVR**

22. Have you ever **had sex** with **anybody else** during your relationship with your regular partner (excluding your regular partner)?

Umeshawahi kufanya mapenzi na mwanamke mwingine ukiwa bado na huyu mpenzi wako?

[] Yes/Ndiyo [] No/La → **EVR_CNML**

IF NO, GO TO Q23. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 23

→ **NMCN_ML**

22a. If so, with how many women?/ Kama jibu ni ndiyo, umekuwa na wanawake wangapi? _____

22b. With who (**Check all that apply**)? / Ni akina nani (**Chagua majibu sahihi**)?

1= Wife/Wives / Bibi/wakezako

How many?/Wangapi? _____ →NUM_WIVE

2= Regular girlfriend/ mpenzi wako

How many?/ Wangapi? _____ →NUM_GF

3= Occasional partner/ Rafiki wa muda

How many?/ Wangapi? _____ →NUM_OCPT

4= Female sex workers/ Makahaba

How many?/ Wangapi? _____ →NUM_FSWS

22e. How often did you **use a condom** with each of them? (**Check all that apply**)

Ulitumia kondomu kwa mda gani nao? (**Chagua majibu sahihi**)

Wife/Wives/ Mke/ wake zako

→WIVE_CD

1=Never/ Hukutumia (0%)

2= Rarely/ Mda kidogo sana (1-24%)

3=Sometimes/ Wakati mwingine (25-49%)

4= Often/ Wakati mwingi zaidi (50-74%)

5= Almost Always/ Karibu wakati wote (75-99%)

6=Always/ Wakati wote (100%)

Other regular girlfriend/ Mpenzi wako

→GF_CD

1=Never/ Hukutumia (0%)

2= Rarely/ Mda kidogo sana (1-24%)

3=Sometimes/ Wakati mwingine (25-49%)

4= Often/ Wakati mwingi zaidi (50-74%)

5= Almost Always/ Karibu wakati wote (75-99%)

6=Always/ Wakati wote (100%)

Other occasional partner/ Rafiki wa mda

→OCPT_CD

1=Never/ Hukutumia (0%)

2= Rarely/ Mda kidogo sana (1-24%)

3=Sometimes/ Wakati mwingine (25-49%)

4= Often/ Wakati mwingi zaidi (50-74%)

5= Almost Always/ Karibu wakati wote (75-99%)

6=Always/ Wakati wote (100%)

Female sex workers/ Makahaba

→FSWS_CD

1=Never/ Hukutumia (0%)

2= Rarely/ Mda kidogo sana (1-24%)

3=Sometimes/ Wakati mwingine (25-49%)

4= Often/ Wakati mwingi zaidi (50-74%)

5= Almost Always/ Karibu wakati wote (75-99%)

6=Always/ Wakati wote (100%)

SEXUAL RISK-TAKING IN THE PRESENCE OF STDs

KUFANYA MAPENZI NA HATARI WAKATI MAGONJWA YA ZINAA YAPO

→YR_MLSTD

23. In the **past year**, has your regular partner had **any STDs** that you know of?

Kwa muda wa mwaka uliopita, mpenzi wako amepata ugonjwa wowote wa zinaa

ambao unajua?

[] Yes/Ndiyo [] No/La

IF NO, GO TO Q24. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 24.

23a. If **yes**, could you describe the symptoms?/ Kama jibu ni ndiyo, eleza dalili ulizopata?

→D_MLSYMP

→STDML_SX

23b. If yes, did you have sex with your regular partner while she had those STD symptoms?

Kama jibu ni ndio uliala na mpenzi wako wakati alukuwa na ugonjwa wa zinaa?

[]Yes/Ndiyo []No/La

23c. If yes, did you wear a condom when you had sexual intercourse with your regular partner? []Yes/Ndiyo []No/La →**STDML_CD**
Kama jibu ni ndiyo mutumia mpira wakati ya ngono/mapenzi?

24. Have you **ever** had a **genital ulcers** or **sores**? →**EVR_GU**
Umeshawahi kupata kidonda au kurimba kwenye ume wako?
[]Yes/Ndiyo []No/La

IF NO, GO TO Q25. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 25.

24a. In the **past year**, have you had a **genital ulcer** or **sore**? → **YR_GU**
Kwa muda wa mwaka uliopita, umewahi kupata vidonda au uvimbe kwa ume wako?
[]Yes/Ndiyo []No/La

IF NO, GO TO Q25. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 25.

24b. If **yes**, did you continue to have sex? /Kama jibu ni ndiyo, uliendelea kufanya mapenzi? []Yes/Ndiyo []No/La → **G_RPSX**

IF NO, GO TO Q25. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 25.

24c. When you did have sex, did you **ever** use a condom/Wakati ulipofanya mapenzi, ulivalia kondomu? → **G_RPSXCD**
[]Yes/Ndiyo []No/La

25. Have you **ever** had sex with your regular partner when she had **genital ulcers** or **sores** ?
Umeshawahi kufanya mapenzi na mpenzi wako wakati alikuwa na hivyo vidonda?
[]Yes/Ndiyo []No/La →**EVR_GMSX**

IF NO, GO TO Q26. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 26.

25a. If yes, did you use a condom?/ Wakati ulipofanya mapenzi, ulivalia kondomu?
[]Yes/Ndiyo []No/La →**GML_CD**

26. Have you **ever** had sexual intercourse with a woman who had **genital ulcers** or **sores**?
Umeshawahi kufanya mpenzi na mwanamke alie na vidonda sehemu za uke?
[]Yes/Ndiyo []No/La → **EVR_GWSX**

IF NO, GO TO Q27. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 27.

26a. If yes, did you use a condom?/ Wakati ulipofanya mapenzi, ulivalia kondomu?
[]Yes/Ndiyo []No/La → **G_EVR_CD**

27 In the **past year**, did you have an **STD**? []Yes/Ndiyo []No/La →**YR_STD**
Umeshawahi kupata ugonjwa wa zinaa mwaka uliopita?

IF NO, GO TO Q28. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 28.

27a. If yes, did you continue to have sex? []Yes/Ndiyo []No/La →**STDRP_SX**
IF NO, GO TO Q28. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 28.

27b. Did you use a condom?/ Wakati ulipofanya mapenzi, ulivalia kondomu?
[]Yes/Ndiyo []No/La →**STDRP_CD**

27c. Could you please describe the symptoms?/ Kama jibu ni ndiyo, eleza dalili ulizopata **→ D_URSYMP**

27d Where did you seek treatment for your STD?/ Ulipata dawa ya kutibu ugonjwa wa zinaa wapi?

1= Pharmacy (Self-Diagnosed & Treated)/ Dukw la dawa **→ RPSK_TRT**
2= Herbal Doctor & Medicine/ Wanganga 3= Government Clinic/ Kliniki ya seikah
4= Private Clinic/ Klinki za kibinafsi 5= No Treatment/ Hukutibiwa
6= Other(Please Specify)/ Zingenezo _____

28 Have you **ever** taken **antibiotics to prevent STDs**? **→AB_4STD**

Umeshawahi kumeza dawa kujizuia kupata magonjwa ya zinaa?

[] Yes/Ndiyo [] No/La

IF NO, GO TO Q30. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 30.

29. How **often** do you take antibiotics for this reason? / **→FREQ_AB**

Wewe hutumia dawa za kujikinga magonjwa ya zinaa wakati gani?

1= Monthly/ Kila mwezi 2= Every 3months/ Kila baada ya miezi
3= Every 6 months/Kila miezi 4= Every year/ Kila mwaka

30. Do you take alcohol ?/ Unakunywa pombe? **→ALCHL**

[] Yes/ Ndiyo [] No/La

30a. How often do you drink alcohol?/ Unakunywa pombe? **→ALCHL_NM**

1= 1-2 drinks/week / Kinuwaji moja au mbili 1-2 kwa wiki
2= 3-6 drinks/week / Kinywaji 3-6 kwa wiki
3= 1-4drinks /day / Kinywaji 1-4 kwa siku
4= more than 4 drinks /day / Zaidi ya vinywaji 4 kwa siku

31. Have you ever paid for sex? [] Yes/ Ndiyo [] No/La **→EV_PAYSX**

31a. Currently, do you pay for sex ? [] Yes/ Ndiyo [] No/La **→ST_PAYSX**

32. Do you take drugs?/ Unatumia madawa yo kulevia? **→DRUGS**

[] Yes/ Ndiyo [] No/La

IF NO, GO TO Q33. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 33.

32a. If yes, please specify?/ Aina gani? _____

→DRGS_TYP

32b. Have you ever taken intravenous drugs?/ **→EVR_IDU**

Umeshawahi kutumia dawa za kudu nga kwenye mishipa ya damu?

[] Yes/ Ndiyo [] No/La

IF NO, GO TO Q33. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 33.

33. Does alcohol intake or your usage of drugs effect your compliance to use condoms?

Ukinywa pombe au madawa wewe husahau kutumia mpira wakati wa ngono?

→ ALDG_CD

[] Yes/ Ndiyo [] No/La

34. If you are HIV negative, or do not know your status, do you think your chances of contracting HIV are (Circle only one answer): **→RSK_HIV**

Unaona kunauwezekano gani kwako kuambukizwa virusi vya ukimwi? (Chagua jibu moja)

1= No risk/ Hakuna uwezekano 2= Low risk/ Kiasi kdogo zaidi

3= High risk/ Kiasi kikubwa zaidi

IF NO RISK/LOW RISK, GO TO Q34a. IF HIGH RISK, GO TO Q34b.KAMA UWEZEKANO NI KIDOGO AU HAKUNA, ENDELEA NA SWALI LA 34a. KAMA UWEZEKANO NI MKUBWA ZAIDI, ENDA KWA SWALI LA 34b.

34a. Why do you think you have no risk/small risk of contracting HIV? (Pls explain)
Kwanini unafikiri kuna uwezekano mdogo au hakuna wa kuambukizwa virusi?

→ Y_LOWRISK

34b. Why do you think you have a great risk of contracting HIV? (Pls explain)
Kwanini unafikiri kuna uwezekano mkubwa zaidi kuambukizwa virusi?

→Y_HRSK

35. Have you ever had an HIV test?/ Umeshawahi kupimwa damu kuchunguza virusi vya ukimwi? [] Yes/ Ndiyo []No/La **→E_HIVTST**

35a. If no, why not?/ Kama jibu ni hapana, ni kwanini? **→Y_NO_TST**

IF NO, GO TO Q37b. KAMA JIBU NI HAPANA, ENDELEA NA SWALI LA 37b.

36. What is your HIV status?/Unajua haku yako ya damu/virusi ya damu?

→RPSTATUS

36a. Did you disclose your status to your regular partner? [] Yes/ Ndiyo []No/La
Umeshamwambia hali yako ya damu ? **→RPDISCLS**

37. How many times have you gone for HIV testing?/ Ni mara ngapi umepimwa virusi vya ukimwi? **→FREQ_TST**

1= Once in your lifetime/ Mara moja maishani mwako

2=Twice in your lifetime/ Mara mbili maishani mwako

3= Less than 5 times in your lifetime/ Muda moja kwa mwako

4=Once aYear/ Muda usio zidi mara

5=Once every 6 months/ Mara moja baada ya miezi sita

37a. Where did you have a test?/ Ulipimiwa damu wapi? _____

→LOC_TST

37b. If you could chose where to get tested, where would you choose? (Pls explain)
Kama utachagua mahalipa kupimiwa damu utachagua wapi? **→C_TSTLOC**

38. Has your regular partner been tested for **HIV**? →**MLTST_RP**

Mteja wako ameshapimwa ukimwi?

1= Yes/ Ndiyo

2= No/La

3=Don't know/Sijuii

IF NO/DON'T KNOW, GO TO Q39. KAMA JIBU NI HAPANA/SIJUII, ENDELEA

NA SWALI LA 39.

38a. If yes, did she disclose her status to you?/ Ikiwa ndio, amesha kueleza hali yako?

Yes/Ndiyo No/La

→**AWARE_ML**

38b. What is her status?/ Ni hali gani? _____ →**RPMLSTAT**

39. What is your motivation to participate in this study? →**RPMOTIV**

Ni nini hasa ilikuwezesha kuja kufiunga na utafiti huu?

40. Have you ever had sex with other men? Yes/Ndiyo No/La

Umeshawahi kufanya mapenzi na mwanaume mwingine?

→**EV_R_MSM**

THIS IS ALL I NEED TO ASK YOU.

HIVI NDIYO NILITAKA KUKUULIZA

DO YOU HAVE ANY QUESTIONS THAT YOU WOULD LIKE TO ASK ME?

UNA SALI LOLOTE UNGEPENDA KUNIULIZAU?

THANK YOU VERY MUCH!

AHSANTE SANA!

LABORATORY

URINE

41. GC PCR Pos Neg ND (**URINE**) → **RP_GCPCR**

42. CT PCR Pos Neg ND (**URINE**) → **RP_CTPCR**

CULTURE

43. GUD SWAB Pos Neg ND (**SWAB**)

→**RP_ULSWB**

1st PLASMA TUBE

44. RPR NEG 1:1 1:2 1:4 1:8 1:16 1:32 >1:32 ND

→ **RP_RPR**

45. TPHA NEG 1+ 2+ 3+ 4+ ND

→**RP_TPHA**

46. HIV ELISAI 0 negative 1 positive 2 indeterminate 3 ND

→**RP_E1HIV**

47. HIV ELISA II 0 negative 1 positive 2 indeterminate 3 ND

→**RP_E2HIV**

48. 2nd PLASMA TUBE FROZEN Yes No

→**RP_PLSTB**

Box Number _____

→**RP_TBBOX**

Position _____

→**RP_TBPOS**

Annex 4.7: Study Selection Criteria

After several informal discussions, an opportunity opened up at the nearby mother to child health (MCH) clinic at the Pumwani maternity hospital. The consensus among clinic staff was that this MCH clinic would be more suitable for men to be surveyed separately from women. Firstly, a family clinic would avoid any breach of confidentiality and privacy that may have occurred with being surveyed in a well known FSW clinic. The importance of having a separate clinic setting to enroll and survey men was supported by FSWs, who appeared to be more receptive in inviting their RPs into a more neutral environment. Secondly, during the resurvey period when FSWs were being enrolled in this study, clinic staff would be overloaded with too many patients, and be unable to adequately cover existing research activities. Consequently, the availability of an additional setting was welcome by all staff. Thirdly, this health clinic was easily acceptable and familiar to the surrounding Pumwani/Majengo neighbourhoods, and as such, it was believed to improve the feasibility of getting FSWs RPs in.

Annex 4.8: RP Recruitment Slip

Date: _____

Please give ML _____ a Note for her Regular Partner to be seen at MCH by Dr. Barasa.

Thank you
Edith & Michelle

Date: _____

Please give ML _____ a Note for her Regular Partner to be seen at MCH by Dr. Barasa.

Thank you
Edith & Michelle

Date: _____

Please give ML _____ a Note for her Regular Partner to be seen at MCH by Dr. Barasa.

Thank you
Edith & Michelle

Date: _____

Please give ML _____ a Note for her Regular Partner to be seen at MCH by Dr. Barasa.

Thank you
Edith & Michelle

Annex 4.9 Response Rate

Response Rate of FSW-RP Pairs		
	Number	Percent
Number of FSWs enrolled in Study	68	100
Number of FSWs without RPs	34	50
Number of FSWs enrolled with RPs	34	50
Number of FSWs without RPs	34	100
Number of Active FSWs without RPs	31	91.1
Number of Inactive FSWs without RPs	3	8.9
Number of FSWs with RPs	34	100
Number of Active FSWs with RPs	26	
Number of Inactive FSWs with RPs	8	

Annex 4.10 Study Enrolment Procedures

The data collection period began in September 2005 and ended in February 2006, and took place during clinic hours from 9am to 2pm Monday to Friday.

Prior to enrolment, both FSWs and RPs were again informed about the purpose of the study, invited to ask questions and raise any concerns that they had, and were re-assured that they could withdraw from study participation at any time while still receiving free treatment for any existing health conditions, including STIs. After this, FSWs and RPs who wanted to participate in the study were requested to sign a consent form.

Data Collection Process

Initial Visit

FSW participants were enrolled in the Majengo health clinic. Once enrolled, FSWs were interviewed by a female nurse to obtain socio-demographic and sexual behavioural information, which took approximately between 20 to 30 minutes. Following the intake interview, HIV-1 serology, STI testing, and a physical examination were conducted. Two cervical swabs were obtained, one for Gonorrhoea and Chlamydia PCR testing, and another for *T.vaginalis* and *N. gonorrhoea* culture.

Meanwhile, RP participants were surveyed at the Pumwani MCH clinic. As with FSW participants, RPs were interviewed to obtain socio-demographic and sexual behavioural information, and were tested for STIs. The process for RPs differed from that for FSWs, however, in 3 respects. First, RPs were surveyed by a male clinic doctor rather than a female nurse. Second, for gonorrhoea and Chlamydia testing, urine samples were collected and analysed using PCR testing. And third, prior to blood being drawn for HIV-1, syphilis, and HSV-2 serology, men were provided HIV voluntary and counselling testing.

Both male and female participants were provided with risk reduction counselling regarding safer sex practices and reducing the risk of HIV transmission.

Result Visit (within 2-4 weeks)

Participants were requested to return to pick up their STI results within 2 to 4 weeks. If participants were diagnosed with any current STIs, they were provided with onsite treatment free of charge, and were treated in accordance with National STI guidelines.

HIV test results were disclosed in a separate room by the clinic doctor, and post test counselling was performed. HIV positive FSWs who meet the WHO guideline cut-offs, were provided free ARV access through the Majengo health clinic. HIV positive men were referred for treatment to the Coptic Clinic in Nairobi, with preference given to subjects diagnosed through research projects in the area.

Laboratory Procedures

For *N. gonorrhoea* and *C. trachomatis* testing, cervical swabs and urine samples were collected and analysed using polymerase chain reaction (PCR) assays (Amplicor PCR Diagnostics, Roche Diagnostic Systems, Ontario, Canada). For *T.vaginalis*, vaginal swabs were taken, and cultured; After which they were analyzed using In Pouch TV (Biomed Diagnostics, San Jose, CA). For HIV and syphilis serology, blood samples were obtained. HIV-1 serology was performed in 2 steps. First, the specimen was screened using an enzyme-linked immunosorbent assay (ELISA) to detect HVI antibodies, using Detect-HIV kit (Biochem ImmunoSystems Inc, Montreal, Canada). Second, if a specimen tests positive, a confirmatory test was performed using Recombingen HIV-1/HIV-2EIA (Cambridge Biotech Corporation, Galway, Ireland). Syphilis testing was also performed in 2 steps. First, a rapid plasma regain test (RPR test, Becton Dickinson, Groot-Bijgaarden, Belgium) was performed. If samples were found to be positive, then they were confirmed by a second test using Treponema pallidum haemagglutination assay (TPHA) (Randoz Laboratories, UK).

Annex 4.11 Selection Bias

Sociodemographic Characteristics

Socio-Demographics	FSW with RPs	FSWs without RPs	P	Test	Sig
Age in years (mean)	39.82	35.82	.033	Independent t-test	Sig
Education Level			0.295	Chi-Square	NS
None	2	2			
Lower Primary (1-3)	9	3			
Upper Primary (4-8)	17	21			
High School (Form 1-4)	6	8			
Marital Status			0.071	Chi-Square	NS
Never married, live alone	13	22			
Never married live with partner	1	1			
Married	10	2			
Widowed/ Divorced/ Separated	10	9			

	FSW with RPs	FSWs without RPs	P	Test	Sig
Prostitution Background					
Duration of Prostitution in months (mean)	128.62	109.18	.347	Independent t-test	NS
Still Practising FSW			0.100	Chi-Square	NS
Yes	26	31			
No	8	3			
Last week, number of partners	20.52	14.03	.213	Independent t-test	NS
Charge per sexual act in Ksh (mean charge)	91.48	219.35	.010	Independent t-test	
Last month, how much did you earn from FSW			0.582	Chi-Square	NS
Less than 5000 Ksh	21	28			
5000-9,999 Ksh	5	3			
10,000-14,999 Ksh	1	1			
Part - time job			0.329	Chi-Square	NS
Yes	11	15			
No	23	18			

	FSW with RPs	FSWs without RPs	P	Test	Sig
FSW Motivation to enroll in study			0.141	Chi-Square	NS
Wants to know her status	8	13			
Wants to know her RP's status	6	5			
Wants to her and her RP's status	3	6			
Wants counseling, treatment, and advice	17	8			

RP Relationship	FSW with RPs	FSWs without RPs	P	Test	Sig
FSW Define RP relationship			0.050	Chi-Square	NS
Husband	21	21			
Boyfriend	7	13			
Live together	5	0			
Child together	1	0			
Durat of relationship in mos	78.68	41.24	0.008	Independ t-test	Sig
RP one time casual client or regular client			0.070	Chi-Square	
Yes	28	24			
No	0	3			
FSW reports RP Condom use			0.635	Chi-Square	NS
Never (0%)	19	18			
Rarely (1-24%)	0	1			
Sometimes (25-49%)	3	6			
Almost Always (75-99%)	2	2			
Always (100%)	10	7			
FSW asks to wear condom			0.353	Chi-Square	NS
Yes	25	28			
No	8	5			
Does RP wear condom when FSW asks			0.228	Chi-Square	NS
Yes	15	19			
No	15	10			
FSW disclose RP that she is an FSW			0.033	Chi-Square	Sig
Yes	26	17			
No	8	16			
FSW disclose HIV status to RP			1.00	Chi-Square	NS
Yes	22	22			
No	12	12			
FSW self reports her current HIV Status			0.200	Chi-Square	NS
HIV positive	13	7			
HIV negative	19	26			
Do not know	2	1			
FSW HIV status			0.431	Chi-Square	NS
HIV positive	22	25			
HIV negative	12	9			
FSW reports RP ever had HIV test			0.090	Chi-Square	NS
Yes	21	12			
No	11	18			
Do not know	2	4			
FSW report RP told her his HIV test			0.629	Chi-Square	NS
Yes	16	10			
No	5	2			

Annex 4.12 Risk, Ethical Considerations, Benefits, and Compensation

Risk

Study risks are minimal. For FSWs, cervical swabs, urine collection, and blood drawn are part of routine resurveys, and as such, this study will only use results obtained from the resurvey. As for RPs, prior to any specimen collection, they will be briefed about the risks of participating in the study, and can voluntarily withdraw from this part. In both cases, participants have been warned about the side effects of discomfort, and localised bleeding.

Ethical Considerations

Also, prior to study enrolment, participants will also be briefed that their participating in the study is voluntary, and they can withdraw at any time. Prior to being enrolled in the study, they will be assured that any information collected on them will be kept anonymous and confidential, and that only clinic staff will have access to this information. Furthermore, their partner, be it FSW or RP, cannot access their STI or HIV status without their permission, thus avoiding any breaches of confidentiality and privacy. As well, FSWs are re-assured that clinic staff will not disclose their occupational status to their RP, in order to prevent any potential threats of violence. However, clinic staff will encourage FSWs to bring their RPs into the health clinic for couples counselling in the event that they would like to disclose their occupational or HIV-1 status. After FSWs and RPs are both briefed on the risks of enrolling in this study, they are requested to sign an informed consent document prior to enrolment.

Benefits

Primary benefit for FSWs enrolling in this study is the provision of clinic services, including free ARV access. However, FSWs are assured that their participation in this study is entirely voluntary, as such they are able to refuse participation and still be able to access clinic services. In light of this, the major benefit for FSWs and their RPs is their enrolment will provide access for the RPs to be screened and treated free of charge for STI and HIV-1.

Compensation

The clinic provides free outpatient medical services to enrolled participants. Based on the larger study protocol, women who take public transport to the clinic for the resurvey and routine follow up visits are reimbursed the cost of transport. This reimbursement will also be provided to men.

Annex 5.1 FSW Definition of RP

FSWs Description of RP	Number	Number missing	Mean	Range	Median	Mode	Percent
Marital Status	34						
Married	10					10	29.4
Not married	24					24	70.6
Is husband same as RP enrolled in study	10						
Yes	10					10	100
No	0						
Definition	34	0	1.588	(1-4)	1	1	
Husband	21					21	61.8
Boyfriend	7					7	20.6
Live together	5					5	14.7
Have child together	1					1	2.8
Duration of relationship (mo)	34	0	78.86	(2-288)	60	60	
RP ever paid you for sex?	34	0	1.18	(1-2)	1	1	
Yes	28					28	82.4
No	6					6	17.6
RP ever casual or regular client	28	6	1	(1-2)	1	1	
Yes	28					28	100
No	0					0	0
Does RP still pay for sex?	28	6	1.93	(1-2)	2	2	
Yes	2					2	7.1
No	26					26	92.9
AVG how much does he pay for sex (Ksh)?	2	32	2600	(200-5000)	2600	200	
Support							
Monthly Allowance	34	0	0.47	(0-1)	0	0	
Yes	16					16	47.1
No	18					18	52.9
Food	34	0	0.82	(0-1)	1	1	
Yes	28					28	82.4
No	6					6	17.6
School Fees	34	0	0.18	(0-1)	0	0	
Yes	6					6	17.6
No	28					28	82.4
Rent	34	0	0.76	(0-1)	1	1	
Yes	26					26	76.5
No	8					8	23.5

Annex 5.2 FSW-RP condom use reporting

Characteristics	RP		FSW		Discordant Ans
	N	%	N	%	
Self reported condom use	32		34		N
Never (0%)	22	64.7	19	55.9	3
Rarely (1-24%)	0		0	0	0
Sometimes (24-49%)	0		3	8.8	3
Often (50-74%)	3	9.4	0	0	3
Almost Always (74-99%)	2	6.3	2	5.9	0
Always (100%)	5	15.6	10	29.4	5

FSW Condom use	RP Condom use						Total
	Never	Rarely	Sometimes	Often	AA	Always	
Never	16	0	2	2	0	1	19
Rarely							
Sometimes	2		1				3
Often							
Almost Always	1						1
Always	3				3	4	9

Annex 5.3: He said, She said – Demographic Concordance

DEMOGRAPHICS								
FSW - RP Marital Status	RP: Wife/Live-in partner			r	p	Sig	OR	
FSW Marital Status	Yes	No	FSW tot	-	0.087	0.765	NS	N/A
Never married, live alone	6	5	11					
Never married, live with partner	1	0	1					
Married	5	2	7					
Widowed/Separated/Divorced	15	9	24					
RP Tot	5	2	7					
RP Marital Status	FSW: RP is husband			r	p	Sig	OR	
RP Marital Status	Yes	No	RP tot	N/A	N/A	N/A	N/A	
Never married, live with partner	1	0	1					
Married	7	0	7					
Widowed/Separated/Divorced	2	0	2					
FSW Tot	10	0	10					
If married, live together	RP: Live together			K	p	Sig	OR	
FSW: live together	Yes	No	FSW tot	0.588	0.088	NS		
Yes	5	1						
No	0	1						
RP Total	5	2	7					
RP MARRIED TO SOMEONE ELSE								
	RP: Polygamous Marriage			K	p	Sig	OR	
FSW: Aware RP married to someone else	Yes	No	FSW tot	0.093	0.477	NS		
Yes	4	12	16					
No	1	7	8					
RP Tot	5	20	24					
	FSW: Aware RP married to someone else							
RP: Marital Status	Yes	No	RP tot	K/r	Chi p	Sig	OR	
Never married, live with partner	1	4	5	N/A	0.046	Sig	N/A	
Married	16	8	24					
Widowed/Separated/Divorced	1	4	5					
FSW Tot	18	16	34					
DURATION OF RELATIONSHIP	RP: Dur in mean (mos)			r	p	Sig	OR	
FSW: Dur. In mean (mos)	FSW mean		RP mean	0.794	0.000	Sig	N/A	
FSW	78.68		98.84					

Annex 5.4: FSW Demographics

FSW Background	Number	Mean	Range
Age (yrs)	26	40.12	(24-58)
Age at first sex (yrs)	26	16.85	(13-23)
Duration of Prostitution (mos)	26	117.88	(1-252)
N of sex partners in last wk	26	21.27	(1-100)
Average charge per sex act (Ksh)	26	93.46	(45-300)
	Number	Percent	
Nationality	26		
Kenyan (1)	15	57,7	
Tanzanian (2)	9	34,6	
Ugandan (3)	2	7,7	
Education	26		
< and Lower Primary	9	34.6	
Upper Primary and <	17	66.4	
Marital Status	26		
Married/live with partner	8	30.1	
Other	16	61.5	
Last month, earning from SW	26		
<5,000 Ksh	20	76.9	
>5,000 Ksh	6	23.1	
Travel to practise sex work	26		
Yes	2	7.7	
No	24	92.3	
SEXUAL PRACTISES			
Ever oral sex	26		
Yes	1	3.8	
No	25	96.2	
Ever sex during menses	26		
Yes	9	34.6	
No	17	65.4	
Ever anal sex	26		
Yes	2	7.7	
No	24	92.3	
Ever IDU	26		
Yes	0		
No	26	100	
Ever Drinker	26		
Yes	17	34.6	
No	9	65.4	

Annex 5.5 FSW Sexual Practises Outside of FSW-RP Relationship

FSW: Ever Oral Sex		Oral Sex		
Partner Type	N	Yes	No	Chi-Sq p-value
CC	26	0	26	0.599
RC	26	1	25	
RP	26	1	25	
FSW: Sex During Menses		Sex during Menses		
Partner Type	N	Yes	No	Chi-Sq p-value
CC	26	7	19	0.935
RC	26	6	20	
RP	26	7	19	
FSW: Ever Anal Sex		Anal Sex		
Partner Type	N	Yes	No	Chi-Sq p-value
CC	26	2	24	0.128
RC	26	0	26	
RP	26	0	26	

Annex 5.6 RPs: sexual history, travel, and general concurrency characteristics

	N	%
Sexual History		
Age of sexual debut (mean yrs)	34	
> 16 years old	9	26.5
16 years old and <	25	73.5
Number of lifetime partners	34	%
>11 lifetime partners	19	55.9
11 lifetime partners and <	15	44.1
Polygamous Marriage	24	
Yes	5	20.8
No	19	79.2
Live with Wife	24	
Yes	18	52.9
No	6	17.6
Travel outside of Nairobi		
Yes	28	82.4
No	6	17.6
Occupation		
Driver	3	9.4
Businessman	18	56.3
Manual Worker	8	35
Other	3	9.4
Ever Concurrent	34	
Yes	27	79.4
No	7	20.6
Currently Concurrent	34	
Yes	23	67.6
No	11	32.4
Other Risk Taking Behavior	N	%
Ever Paid for Sex	31	
Yes	16	51.6
No	15	48.4
Ever had sex with a man	34	
Yes	2	5.9
No	32	94.1
Ever Alcohol	34	
Yes	25	73.5
No	9	26.5
Ever IDU	34	
Yes	0	0
No	34	100
Ever take drugs	34	
Yes	2	5.9
No	32	94.1
Ever had taken antibiotics to prevent STDs	34	
Yes	0	0
No	34	100