Sexual and Reproductive Health Risks among Key Populations Vulnerable to HIV in Kenya

Jerry Okoth Okal
2011

Doctoral thesis submitted to the Faculty of Medicine and Health Sciences, Ghent University

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PhD Co-Supervisor: Prof. Dr. Stanley Luchters
Dept of Obstetrics and Gynaecology, Ghent University
For my parents Babycher and Festo who always believed in me

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Preface

The AIDS epidemic continues to devastate communities, reversing decades of development progress. In most of sub-Saharan Africa, no single family or community is oblivious of the catastrophic consequences of the AIDS scourge. What is little known, however, is the devastating effect of the epidemic among underserved and stigmatised groups (such as men having sex with men, sex workers, injecting drug users and persons living with HIV). Their plight almost always goes unnoticed. Among marginalized communities, homophobia is rife as is stigma and discrimination. Often, these individuals fall outside the net of health services even with a strong research evidence base suggesting their heightened vulnerabilities. In many countries, existing laws and policies expose these groups to severe actions from their communities, clients and law enforcing agencies. The rampant mortification of these groups must cause us to pose the question: Why this stigma and marginalization? This question, on its own merit, should urge society to critically consider what needs to be done – as individuals, as a people, as a continent and as a generation to tackle the AIDS epidemic and other sexual and reproductive health problems among vulnerable yet highly marginalized groups.

United Nations Secretary-General Ban Ki-moon in his opening address to the International AIDS Conference in Mexico in 2008, poignantly described the problems affecting these population groups:

“In countries without laws to protect sex workers, drug users and men who have sex with men, only a fraction of the population has access to prevention. Conversely, in countries with legal protection and the protection of human rights for these people, many more have access to services. As a result, there are fewer infections, less demand for antiretroviral treatment and fewer deaths. Not only is it unethical not to protect these groups; it makes no sense from a health perspective. It hurts all of us.”

It hurts us all...

It’s my humble hope, therefore, that the contribution of studies presented in this thesis will not only contribute to science in general, but also draw attention to the plight of these forgotten groups to improve their health and well-being.
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1. INTRODUCTION
1.1 Background

Global efforts to address the AIDS epidemic have brought promising developments, including increased access to effective treatment and prevention programmes hence many countries of the world including sub-Saharan Africa which bear a greater burden of the disease have seen substantial reduction in HIV infection rates. In spite of significant gains achieved through treatment scale-up and prevention initiatives, sub-Saharan Africa’s epidemic continues to increase and outpace the response—HIV remains a critical health issue after almost three decades of the pandemic. According to surveillance data the pandemic is slowing in some countries but continue to surge in others [1, 2]. While data on sexually transmitted infections (STI) and on sexual behaviour indicate the potential for resurgence in HIV among key vulnerable groups such as: female sex workers (FSW), men having sex with men (MSM), male sex workers (MSW) and injecting drug users (IDU).

According to several studies, many of these population groups engage in high risk behaviours and are known to have elevated rates of STI and HIV. Knowledge about HIV, STIs and condom use remain low among these population sub groups while a majority engage in multiple concurrent sexual relationship and transactional sex [3]. Similarly, the sexual networks of these populations go beyond their immediate peer groups and are linked to the epidemiology of HIV/AIDS more broadly. In general, sex workers and men having sex with men are stigmatized, marginalized and criminalized by the communities in which they live.

In addition, there is a severe lack of legislation and policies protecting such marginalized groups from the actions of clients, law enforcing agents and the community. This can heighten their risk of infection with STI or HIV [4, 5]. Criminalization of sex work and homosexuality, like the kind existing in sub-Saharan Africa, is a huge hindrance to promoting public health, especially when it comes to the prevention of HIV/AIDS.

In many countries, HIV prevention and sexual and reproductive health (SRH) support programmes are far from unanimous in taking these population groups into consideration [6]. Currently, HIV prevention efforts reach a mere fraction of these populations at higher risk. In most countries, HIV prevention efforts are “general and overarching” and not specifically aimed at groups at higher risk [7,8]. To a great extent, prevention efforts in Africa have focused primarily on developing risk reduction interventions among the general population without targeting marginalized population sub groups. Besides, government and donor funding aimed at these groups is “negligible or non-existent”. However, limited available evidence from programmes providing risk reduction commodities and services such as condoms, peer education and clinic-based risk reduction interventions have been associated with reductions in STI and HIV rates, in some parts of sub-Saharan Africa [9,10].
1.2 A Global Overview of HIV/AIDS

Globally the number of people living with HIV continued to grow in 2008, reaching an estimated 33.4 million [31.1 million–35.8 million]. It is estimated that in 2008 alone, 2 million [1.7 million–2.4 million] deaths occurred worldwide due to AIDS-related illnesses. While the total number of people living with HIV in 2008 increased by 20% and the prevalence was nearly threefold higher than in 1990. This is in part attributed to antiretroviral therapy coverage that increased from 7% in 2003 to 42% in 2008, with especially increased coverage attained in eastern and southern Africa (48%) [9,10]. Overall, since its emergence an estimated 25 million people have died of AIDS.

According to UNAIDS, the epidemic appears to have stabilized in most regions, although prevalence continues to increase in Eastern Europe, Central Asia and in other parts of Asia due to high rates of new HIV infections attributed primarily to injecting drug use and heterosexual transmission. In the Americas, Europe, Asia and the Pacific and the Middle-East and North Africa, HIV low prevalence rates noted in the general population contrasts higher rates in certain key population groups. As a result, these countries experience what are usually described as concentrated epidemics [10,11]. The resurgence of the epidemic among populations at increased risk in high-income countries is also increasingly being documented. The data summarized in Table 1 highlight regional HIV prevalence and mortality rates and depict areas where more intensified action is needed in order to achieve the desired impact in AIDS response.
Table 1: Regional HIV and AIDS Statistics, 2001 and 2008

<table>
<thead>
<tr>
<th>Region</th>
<th>Adults and children living with HIV</th>
<th>Adults newly infected with HIV</th>
<th>Adult prevalence (%)</th>
<th>Adult and child deaths due to AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>22.4 million [20.8 million-24.1 million]</td>
<td>1.9 million [1.6 million-2.2 million]</td>
<td>5.2[4.9-5.4]</td>
<td>1.4 million [1.1 million-1.7 million]</td>
</tr>
<tr>
<td>2001</td>
<td>19.7 million [18.3 million-21.2 million]</td>
<td>2.3 million [2.0 million-2.5 million]</td>
<td>5.8[5.5-6.0]</td>
<td>1.4 million [1.2 million-1.7 million]</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>310 000 [250 000-380 000]</td>
<td>35 000 [24 000-46 000]</td>
<td>0.2 (&lt;0.2-0.3)</td>
<td>20 000 [15 000-25 000]</td>
</tr>
<tr>
<td>2001</td>
<td>200 000 [150 000-250 000]</td>
<td>30 000 [23 000-40 000]</td>
<td>0.2[0.1-0.2]</td>
<td>11 000 [7 800-14 000]</td>
</tr>
<tr>
<td>South and South-East Asia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>4.8 million [3.4 million-4.3 million]</td>
<td>280 000 [240 000-320 000]</td>
<td>0.3[0.2-0.3]</td>
<td>270 000 [220 000-310 000]</td>
</tr>
<tr>
<td>2001</td>
<td>4.0 million [3.5 million-4.5 million]</td>
<td>310 000 [270 000-350 000]</td>
<td>0.3[&lt;0.3-0.4]</td>
<td>260 000 [210 000-320 000]</td>
</tr>
<tr>
<td>East Asia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>850 000 [700 000-1.0 million]</td>
<td>75 000 [58 000-88 000]</td>
<td>&lt;0.1 [&lt;0.1]</td>
<td>59 000 [46 000-71 000]</td>
</tr>
<tr>
<td>2001</td>
<td>560 000 [480 000-650 000]</td>
<td>99 000 [75 000-120 000]</td>
<td>&lt;0.1 [&lt;0.1]</td>
<td>22 000 [18 000-27 000]</td>
</tr>
<tr>
<td>Oceania</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>59 000 [51 000-68 000]</td>
<td>3900 [2900-5100]</td>
<td>0.3[&lt;0.3-0.4]</td>
<td>2000 [1100-3100]</td>
</tr>
<tr>
<td>2001</td>
<td>36 000 [29 000-45 000]</td>
<td>5900 [4800-7300]</td>
<td>0.2[&lt;0.2-0.3]</td>
<td>&lt;1000 [&lt;500-1200]</td>
</tr>
<tr>
<td>Latin America</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>2.0 million [1.8 million-2.2 million]</td>
<td>170 000 [150 000-200 000]</td>
<td>0.6[0.5-0.6]</td>
<td>77 000 [66 000-89 000]</td>
</tr>
<tr>
<td>2001</td>
<td>1.6 million [1.5 million-1.8 million]</td>
<td>150 000 [140 000-170 000]</td>
<td>0.5[&lt;0.5-0.6]</td>
<td>66 000 [56 000-77 000]</td>
</tr>
<tr>
<td>Caribbean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>240 000 [220 000-260 000]</td>
<td>20 000 [16 000-24 000]</td>
<td>1.0 [0.9-1.1]</td>
<td>12 000 [9300-14 000]</td>
</tr>
<tr>
<td>2001</td>
<td>220 000 [200 000-240 000]</td>
<td>21 000 [17 000-24 000]</td>
<td>1.1[1.0-1.2]</td>
<td>20 000 [17 000-23 000]</td>
</tr>
<tr>
<td>Eastern Europe and Central Asia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>1.5 million [1.4 million-1.7 million]</td>
<td>110 000 [100 000-130 000]</td>
<td>0.7[0.6-0.8]</td>
<td>87 000 [72 000-110 000]</td>
</tr>
<tr>
<td>2001</td>
<td>900 000 [800 000-1.1 million]</td>
<td>280 000 [240 000-320 000]</td>
<td>0.5[0.4-0.5]</td>
<td>26 000 [22 000-30 000]</td>
</tr>
<tr>
<td>Western and Central Europe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>850 000 [710 000-970 000]</td>
<td>30 000 [23 000-35 000]</td>
<td>0.3[0.2-0.3]</td>
<td>13 000 [10 000-15 000]</td>
</tr>
<tr>
<td>2001</td>
<td>660 000 [580 000-760 000]</td>
<td>40 000 [31 000-47 000]</td>
<td>0.2[&lt;0.2-0.3]</td>
<td>7900 [6500-9700]</td>
</tr>
<tr>
<td>North America</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>1.4 million [1.2 million-1.6 million]</td>
<td>55 000 [36 000-61 000]</td>
<td>0.8[0.5-0.7]</td>
<td>25 000 [20 000-31 000]</td>
</tr>
<tr>
<td>2001</td>
<td>1.2 million [1.1 million-1.4 million]</td>
<td>52 000 [42 000-60 000]</td>
<td>0.6[0.5-0.7]</td>
<td>19 000 [16 000-23 000]</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>33.4 million [31.1 million-35.8 million]</td>
<td>2.7 million [2.4 million-3.0 million]</td>
<td>0.8[&lt;0.8-0.8]</td>
<td>2.0 million [1.7 million-2.4 million]</td>
</tr>
<tr>
<td>2001</td>
<td>29.0 million [27.0 million-31.0 million]</td>
<td>3.2 million [2.9 million-3.6 million]</td>
<td>0.8[&lt;0.8-0.8]</td>
<td>1.9 million [1.6 million-2.2 million]</td>
</tr>
</tbody>
</table>

Source: UNAIDS, 2009

1.3 Sub-Saharan Africa

Sub-Saharan Africa remains more heavily affected by HIV and AIDS than any other region of the world. In 2008, the region accounted for 67% of HIV infections worldwide, 68% of new HIV infections among adults and 91% of new HIV infections among children. The region also accounted for 72% of the world's AIDS-
related deaths in 2008 while an estimated 1.9 million [1.6 million—2.2 million] people living in sub-Saharan Africa became newly infected with HIV, bringing the total number of people living with HIV to 22.4 million [20.8 million—24.1 million]. While the rate of new HIV infections in sub-Saharan Africa has slowly declined—the number of people living with HIV (PLHIV) slightly increased in 2008, in part due to increased longevity from enhanced HIV treatment. Adult (15—49 years) HIV prevalence declined from 5.8% [5.5—6.0%] in 2001 to 5.2% [4.9—5.4%] in 2008 [10,13].

Consistent with the generalized nature of the region's epidemic, HIV affects all social and economic groups. However, in sub-Saharan Africa, where the epidemic is worst, more than half of adults with HIV are women and young people aged 15-24. Women and girls (as compared to men) continue to be affected disproportionately. Gender inequalities and disempowerment hamper women from negotiating safer sex both in stable and casual partnerships and especially within sex work [14]. In addition, sexual violence is rife in the region (certainly in the context of marriage, sex work, war and conflict), inevitably increasing vulnerability of HIV infection for women due to gender-power differentials. For instance, the odds of becoming infected are especially high for girls and young women.

The epidemic is also affecting young people disproportionately; the youth have been shown to be at higher risk of contracting HIV and/or having to deal with the consequences of HIV and AIDS: almost two-thirds of infected young people are living in sub-Saharan Africa (15-24 year-olds account for nearly half of all new HIV infections worldwide). A variety of factors make young people vulnerable to HIV infection. These include cultural, societal, legal and religious practices and beliefs, changes in the political or social environment, and factors such as war and poverty. Data also show that the youth engage in early sexual debut (often before their 15th birthday) and often have a low condom uptake [15]. Conflicting norms and values about sexuality, and increasing urbanisation and poverty also encourage premarital sexual activity among adolescents.

As well, among those most affected by the HIV epidemic in the region are “hidden” and “hard to reach” populations such as adult female, male, as well as children victimised by the sex trade who stand the highest risk of contracting HIV [13,15]. The nature of sex work makes those involved in sex work more susceptible to sexually transmitted infections, violence, unprotected sex, and alcohol and substance abuse, all of which potentially increase the risk of contracting HIV [10]. A number of studies have established sexual behaviour and heightened risks among sex workers. Data reported from seven African countries (Benin, Burundi, Cameroon, Ghana, Guinea-Bissau, Mali and Nigeria) demonstrate that more than 30% of all sex workers are living with HIV [2,15]. In addition, it is well recognized that sex workers and their clients are a potential epidemiological bridge to other populations and are a priority population for HIV prevention programmes. Whereas the impact of sex work on rate of new HIV infections varies widely in sub-Saharan Africa, it impacts significantly on the HIV/AIDS epidemics of a number of countries in this region. In Ghana, for example, FSWs and their clients made up a third of new HIV infections in 2009. In the
same year, in Uganda, 10% of all new HIV infections and 14% of HIV infections in Kenya occurred among similar population group [2,15].

Likewise, men having sex with other men are particularly faced with high risk of HIV infection or other STIs. In most of sub-Saharan Africa, homosexuality is not tolerated and men who have sex with men often have female sexual partners to hide their same-sex relations from their friends and families or to avoid persecution. Although data from the region is severely limited, studies conducted of African men who have sex with men have documented high HIV transmission rates through unprotected anal sex [16, 17]. In Lagos, for example, a survey conducted among MSM showed that more than one in four (25.4%) men who have sex with men tested HIV-positive [18]. In Soweto, South Africa, a study found an overall HIV prevalence of 13.2%, increasing to 33.9% among gay-identified men [18]. While, a cross-sectional survey of 537 MSM in Malawi, Namibia and Botswana found HIV prevalence of 21.4%, 12.4% and 19.7% among study participants in the three countries, respectively.

Sexual behavior and other risk factors of sex workers, MSM and other hidden populations has potential implications for the broader national HIV epidemics owing to the extended sexual networks of these population groups. Currently, however, only about one in three sex workers receive adequate HIV prevention services in sub-Saharan Africa, with even fewer having access to HIV treatment, care and support [9, 18]. Related services for MSM are limited or non existent in most of Africa.

In most parts of the continent, there are limited country-level programmes that specifically address SRH and HIV prevention among sex workers and other groups at increased risk. A few civil society organisations have developed and implemented effective programmes for sex workers and their clients in this setting, however, most of these programmes are small in scale and operate with insufficient resources. Moreover, the number of women engaged in sex trade forms a substantial population of many countries in the sub-Saharan region (See Table 2 below). Such a scenario possibly undermines access to and provision of quality services.

**Table 2: Estimated number of female sex workers in general population surveys (adapted from Vandepitte J et al) (19)**

<table>
<thead>
<tr>
<th>Region</th>
<th>Country, year</th>
<th>% Adult women having paid sex in last 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Capital city</td>
</tr>
<tr>
<td>Western Africa</td>
<td>Ivory Coast, 98-99 [20]</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>Guinea 99 [20]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Niger, 98 [20]</td>
<td>4.5%</td>
</tr>
<tr>
<td></td>
<td>Nigeria, 03 [21]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Sierra Leone, 02</td>
<td>-</td>
</tr>
<tr>
<td>Eastern Africa</td>
<td>Kenya, 03 [20]</td>
<td>-</td>
</tr>
<tr>
<td>Southern Africa</td>
<td>Madagascar, 03-04 [20]</td>
<td>3.5%</td>
</tr>
</tbody>
</table>
1.4 Role of Law and Health among Key Vulnerable Groups

A major challenge to access to health and human rights services among many hidden and at risk populations in many regions is the continued existence and application of repressive and unjust laws. Sex work and existence of same-sex relations invoke ire among many and is often associated with abnormality. These practices are also associated with high level of stigma, violence and even state-sanctioned killings [20]. Many countries have established criminal penalties that make it an offence for individuals to engage in same-sex conduct, or penalize individuals for their sexual orientation or gender identity. For instance, consensual same-sex conduct is outlawed in about 80 countries [12, 20]. Similarly, in many countries, the intentional or reckless infection of a person with the HIV is a crime. People who deliberately pass on HIV can be charged with criminal transmission of the disease, murder, manslaughter, attempted murder or assault.

Consistent with many parts of the world, African countries subscribe to similar laws. In Malawi, Nigeria, Uganda and Zambia, consensual male-male sexual activity is criminalized, often for ‘unnatural offences’ [21]. Recently, in Uganda, the proposed Anti-Homosexuality Bill seeks to broaden the criminalization of homosexuality by introducing the death penalty for people who have previous convictions, are HIV-positive, or engage in same sex acts with people less than 18 years of age. The Bill also includes provisions for Ugandans who engage in same-sex sexual relations outside of Uganda, asserting that they may be extradited for punishment [20].

In a similar way, in Kenya, the existing law criminalizes same-sex sexual activity and sex work [22-25]. Deliberate transmission of HIV is also described as a criminal offence in the HIV Act. Thus, if a person who knows his or her status infects another person willingly or intentionally, they are liable to be charged in a court of law. Taken together, many of the laws documented here affect access to service and hampers efforts of outreach workers to deliver interventions to most vulnerable populations. Often, it is difficult to reach marginalized groups believed to be at odds with the law with prevention programs. However, over the years, isolated or stand-alone programmes have been working with these groups, but under constraints. In many cases, a series of difficult legal issues arise from attempts to programme more directly for these populations. For instance, under the current laws in Kenya needle and syringe exchange program for IDU is prohibited. Such legal barriers hinder delivery of basic services [24,25].

Legal or policy responses to HIV/AIDS should be cognizant of the fact that scientific evidence regarding modes of HIV transmission and levels of risk must be the basis for rationally determining if, and when, an individuals conduct should attract criminal liability. Similarly, application of such laws should not only be the way in achieving the overall pursuit of public health but should also conform to individual human rights norms, particularly the principles of
non-discrimination and of due process. The table below shows the contexts of lower and middle income countries that were repressive, neutral or protective in relation to populations at increased risk.

Table 3: Legal systems and sexual rights per region adapted from (Cáceres et al 2008) (12)

<table>
<thead>
<tr>
<th>Number of countries per region</th>
</tr>
</thead>
<tbody>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Repressive</td>
</tr>
<tr>
<td>Highly repressive</td>
</tr>
<tr>
<td>Moderately repressive</td>
</tr>
<tr>
<td>Neutral</td>
</tr>
<tr>
<td>Protective</td>
</tr>
<tr>
<td>Protective Measures</td>
</tr>
<tr>
<td>Recognition measures</td>
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<tr>
<td>Total</td>
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<td>nd</td>
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</tbody>
</table>

Repressive: laws prohibits sexual intercourse between people of the same sex; highly repressive: laws consider sodomy a crime and impose severe penalties such as death, heavy labour, imprisonment for at least 5 years; moderately repressive: laws consider sodomy a crime and impose penalties of less than 5 years or fines; neutral: no legal prohibition of same-sex behaviour or express mention of sexual diversity; protective: laws prohibit discrimination on grounds of sexuality, in the constitution or legislation, with or without positive measures of recognition; protective with protection measures: laws prohibit discrimination on grounds of sexuality, without any positive measures of recognition; protection with recognition measures: laws include an explicit prohibition of discrimination on grounds of sexuality, with positive measures such as marriage, civil union, transgender rights recognition. All legal systems classified as ‘repressive’ here correspond to Caribbean countries. 'Sodomy', however, should not necessarily be interpreted as ‘anal sex’. In many jurisdictions it covers acts such as oral sex between heterosexuals and any form of so-called unnatural sex.

1.5 HIV in Kenya

In Kenya sex workers were among the first group affected with HIV—a study from 1985 reported HIV prevalence of 59 per cent amongst a group of sex workers in Nairobi [26]. By 1987, HIV appeared to spread rapidly among the population and between 1989 and 1991, HIV prevalence among pregnant women in the capital city of Nairobi had increased from 6.5 per cent to a high of 13 per cent [30]. However, rapid expansion of HIV preventative interventions saw a decline from a peak of 13.4 per cent in 2000 to 6.3 per cent in 2008 [27]. The national estimates show that in 1997-98 the prevalence among adults (15-49 years) was 10 percent (Sentinel Surveillance) declining to 6.7 percent (KDHS 2003), 7.1 percent (KAIS 2007) and 6.3 percent (KDHS 2008-09). The recent KAIS 2007 and KDHS 2008-09 surveys show that the prevalence has stabilized and the Mode of Transmission Study (2008) – MoT show Kenya has a mixed HIV epidemic — both generalized and concentrated epidemic [28].
According to the KAIS and DHS surveys, significant differences in HIV prevalence occur in the country. HIV prevalence differs regionally as well as by sex and age. Currently, an estimated 166,000 Kenyans become infected with HIV every year, 34,000 of whom are infants [28, 29]. Women are at a greater risk (8.4%) than men (5.4%), and young women aged 15-24 year are four times more likely to be infected (5.6%) than young men of the same age group (1.4%). An estimated 1,027,000 adults living with HIV in Kenya reside in rural areas, and 390,000 live in urban areas. As already documented in some sub-Saharan countries, variance in HIV prevalence and epidemiological patterns are evident in Kenya. There is a greater than 15-fold variation in HIV prevalence among provinces, ranging from 1% in North Eastern province to 15.3% in Nyanza province [28-30]. Nationally, though, most new infections (44%) occur in couples who engage in heterosexual activity within a union or regular partnership. Men and women who engage in casual sex contribute 20 per cent of the new infections, while sex workers and their clients account for 14 per cent. Men who have sex with men and prison populations contribute 15% while injecting drug user’s account for 4 per cent of new infections. Health facility-related infections contribute 3 per cent of new cases [31].

Mainly the generalized epidemic is driven by discordance, unprotected sex, multiple and/or concurrent partnerships, low knowledge of HIV status and low male circumcision among some sectors of the population [30,31]. Whereas, the concentrated epidemic is driven by vulnerable sub-groups that are at increased risk of HIV infection mainly, sex workers and their clients, MSM and IDUs. Available evidence
show high HIV prevalence amongst a number of these population groups [7,31]. Majority of these population groups engage in high risk sexual behaviour involving unprotected vaginal and anal sex, multiple concurrent partnerships and sharing of contaminated needles among IDU’s. Besides, as earlier mentioned trading in sex, same-sex practices and injection drug use are illegal in Kenya making it difficult to reach these groups with HIV and other SRH, treatment and care services.

**Table 4: Contributors to new HIV infections across adult populations (Spectrum Model, MoT, 2008)**

<table>
<thead>
<tr>
<th>Source of Incidence</th>
<th>% of National Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterosexual sex within union/regular partnership</td>
<td>44.1</td>
</tr>
<tr>
<td>Casual heterosexual sex</td>
<td>20.3</td>
</tr>
<tr>
<td>MSM and prison</td>
<td>15.2</td>
</tr>
<tr>
<td>Sex work</td>
<td>14.1</td>
</tr>
<tr>
<td>Injecting Drug Use</td>
<td>3.8</td>
</tr>
<tr>
<td>Health facility related</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Source: UNGASS Country Report, 2010

Also, despite evidence alluding to higher levels of risk among key population groups, the current HIV prevention response in Kenya is still more targeted on reducing transmission in the general population, with a relative neglect of specific population sub groups. Yet networks of these population sub groups are inextricably linked with that of the general population. The epidemiological overlap between these key population groups may have implication for disease trends in Kenya. More so, the aspect of sexual mixing patterns could potentially have a core role in the spread and persistence of SRH problems including the HIV epidemic. Existing interventions have often ignored the interlink of HIV transmission between the general population and specific population groups even though available evidence show links in the pattern of transmission. Figure 2 depicts possible routes of HIV transmission in Kenya.

**Figure 2: Possible routes of HIV transmission in Kenya**
1.6 Response to the AIDS Epidemic in Kenya

Since the first case of HIV in Kenya was diagnosed in 1984, the government’s response to the epidemic has taken significant strides. The Government of Kenya (GOK) established Policy Guidelines for HIV and AIDS in Sessional Paper No. 4 of 1997 and in 1999 declared HIV epidemic a national disaster and created the National AIDS Control Council (NACC) under the Office of the President to coordinate a multi-sectoral response to HIV/AIDS. Thereafter the first Kenya National HIV/AIDS Strategic Plan (KNASP) was developed in 2000-2005 to establish response to the epidemic in partnership with all stakeholders [32]. In 2005/6-2009/10, the second KNASP was formulated to provide the framework to address challenges posed by the HIV epidemic. Mainly, its goal was to reduce the spread of HIV, to improve the quality of life of people who are infected and affected by the disease, and to mitigate the social and economic effects of HIV. Further, due to the changing dynamics of HIV/AIDS, NACC launched the third KNASP in 2009 to address the new challenges posed by HIV. In this KNASP, the GOK identified gaps in programming for various key population groups and formulated plans to address them by:

1. Developing mechanisms for identifying key populations at higher risk and their networks to make it easier to offer them access to prevention interventions;
2. Strengthening capacity at provincial and district levels to support effective design and implementation of decentralised response plans;
3. Increasing coverage of a package of HIV/STI and reproductive health services to key populations; and
4. Improving capabilities of programme planners at the provincial and district levels to interpret and use research and surveillance data.

Importantly the AIDS response in Kenya has been partly successful leading to reductions in overall HIV prevalence and increased coverage in prevention, treatment and care among the general population [30, 33]. However, and all along, the predominant roles of heterosexual and mother-to-child transmission have been the primary targets. However preventing new infections among the marginalized sectors of the population is still under achieved but represents the only long-term, sustainable way of turning the tide against AIDS epidemic. In this way, marginalized sectors of the population represent the future course of Kenya’s AIDS response. Therefore, to address emerging challenges, current prevention programmes require a combination of interventions tailored to the needs of key vulnerable population groups like female sex workers, male sex workers and other groups at increased risk. In Kenya, targeted interventions for groups at higher risk is long overdue. However success on this front depend on a number of actions including increasing levels of HIV/AIDS-related knowledge; addressing social stigmatization especially among the general population; repealing unjust and irrational laws; risk behaviour
modification; improving access to quality health care services for SRH; provision and uptake of HIV counselling and testing; and access to antiretroviral therapy (ART), including prevention and treatment of opportunistic infections. To effectively address these challenges, policymakers and programme planners need the highest quality data to implement, monitor and evaluate HIV prevention and SRH care and treatment services for vulnerable sub populations.

1.7 Sexual and Reproductive Health in Contemporary Kenya

Ideally in Kenya, sexual and reproductive rights apply to all individuals regardless of socio-economic, race or HIV status. Yet more often than not, the rights of underserved populations groups such as sex workers, MSM, IDUs and PLHIV are not recognized or given priority. Gender inequality, stigma and discrimination put restrictions and sometimes control the decisions that key population groups can make regarding their sexual and reproductive health choices. Due to criminalization, HIV-related stigma and marginalization, the access of key vulnerable populations to critically needed information and services is severely limited, with dire consequences. In Kenya, SRH services for sex workers, MSM and PLHIV are limited in scope and quality. This is due, in part, to lack of such services, which in itself is a manifestation of marginalization among these population groups. Further, and more importantly, access to services is constrained by lack of legal or policy directions. Because of this, a vast majority of these population group are outside the ambit of health care services.

Although provision of SRH services by the state in public health facilities reaches a larger segment of the general population, this cannot be said of sex workers and other specific sub populations of interest. Essential services such as family planning; maternal care; prevention of mother-to-child transmission of HIV (PMTCT); voluntary counselling and testing for HIV (VCT); quality counselling; gender-based violence services; sexual health information and counselling; gynaecological care, including STI screening and treatment; and psychosocial services are lacking or inadequate [33, 35].

In contemporary Kenya, sexual and reproductive health and rights issues remain contentious. Time and again SRH issues are viewed as conflicting with societal mores which maintain that sex should only take place within the confines of heterosexual marriage. There is also a widely held belief among policy makers and religious leaders that sex work and male-male sex are immoral practices that should not be tolerated. Such perceptions negatively influence policy direction, hence budget allocations for targeted interventions are mostly not given priority. Besides, sex education is viewed as unnecessary, despite the fact that many cases of STIs including HIV infection are recorded both among vulnerable groups and the general population. Further, and as a result, many key population groups hold misconceptions regarding SRH ill-health and consequently engage in risky sexual practices.

As a result, notably high rates of HIV and STI continue to be recorded among sex workers and other key vulnerable groups. HIV prevalence in recent studies among FSW in Kenya ranges between 24% and 47%,
considerably higher than the current prevalence of 7% in the general population [7,37-38]. Among male sex workers, findings suggest HIV prevalence of 20-25% [39,40]. In addition, research suggests sex workers are likely to have high rates of unintended pregnancy and unmet need for contraceptive services. For the reasons stated, attaining and preserving the rights of key populations at increased risk is crucial to ensure that SRH services are of the appropriate range and quality and that they are accessible to all who need them. In general, there needs to be a greater awareness of the larger social context of issues affecting sexuality, sexual health, access to care, and confidentiality among these groups. Proactive awareness and response to SRH issues may help reduce the risk of adverse outcomes associated with unprotected sex, violence and unintended pregnancy. Currently, the relationship between SRH and improved prevention, treatment, and care for HIV/AIDS, and their role in contributing to improved sexual health and overall well-being, are now widely recognized as key in turning the tide against HIV epidemic. Moreover challenges to SRH and HIV/AIDS share the same root causes, including poverty, gender inequality, marginalization, and stigmatization [41]. Hence ensuring access to appropriate HIV and SRH services for sex workers and their clients, MSM and PLHIV would immensely contribute to an effective national response to HIV and other SRH problems.

1.8 Key Vulnerable Groups

In Kenya, key vulnerable population groups include, but are not limited to, female sex workers, male sex workers and their clients, men who have sex with men, mobile populations, and injecting drug users. In this thesis, we examine SRH and HIV risks among female sex workers and male sex workers in Kenya.

1.8.1 Female sex workers

In Kenya sex work is prevalent and is a way of life for many poor women [34-37]. It is estimated that 4.3%-6.6% of urban women of reproductive age in Kenya engage in sex work [19,42]. Many young Kenyan women who turn to sex work come from disadvantaged backgrounds, are poorly educated, and lack the skills necessary for formal employment. As in other countries where heterosexual transmission is the main mode of transmission, sex workers and their partners have played an important role in the HIV epidemic in Kenya. Studies among FSW have documented sustained high HIV and STIs prevalence. In Kenya, FSWs HIV prevalence is estimated to be 10 to 20 fold higher than among the general population [7, 37-38]. High rates of HIV and other STIs is mainly facilitated by: exposure to high risk sexual behavior including unprotected sex, frequency and number of sexual partners, unprotected anal and vaginal intercourse, coerced sex, rape, dry sex and substance use [39-43]. It is widely assumed that there are thousands of FSW operating in major towns and cities, with especially large numbers in the main cities of Kisumu, Mombasa and Nairobi An enumeration study documented 5600 FSW along one trucking route in Kenya [44].
As is the case in similar contexts, sex work in Kenya is markedly heterogeneous and range from “formal” sex work in organized establishments such as massage parlours and escort agencies, to “informal” sex work based on the streets, bars and track stops. FSW (especially street-based workers) usually operate in unsafe, risky and crime-laden locations limiting their access to health-related services. In addition, the illegal nature of sex work, competition for clients and poor working areas and the unpredictable nature of clients (for example violent clients, clients demanding unprotected sex, rapists, etc) mean sex workers are continually exposed to physical harm and unprotected sex. FSW also contend with unmet contraceptive needs including unintended pregnancies and induced abortion. All these challenges mean FSW are among those who are most vulnerable to HIV infection and other SRH risks. Because of this, HIV prevention initiatives should consider the complex issues underlying sex work dynamics, beyond a simple focus on the risk of HIV transmission through sex.

There is growing evidence about the importance FSWs and their clients as bridging groups and drivers of the HIV epidemic [31]. This applies across many sub-Saharan countries and Asia where the epidemic is at different stages of maturity. In Kenya there is much debate about the role of FSWs in the HIV epidemic. The degree to which they are acting as a bridge to the general population is probably the key question for the future trajectory of the epidemic.

### 1.8.2 Male sex workers

Male-to-male sexual practices are illegal in Kenya and remain highly stigmatized within government, religious, community and health structures. So far a few studies conducted in Kenya suggest men having sex with men to be at high risk for HIV and other STIs due to high rates of unprotected anal intercourse and a high frequency and total number of partners [39, 45]. Heightened vulnerability to infection is also mediated through socio-economic and cultural factors. In the same way perceptions and experiences of stigma and discrimination may inhibit many men from openly discussing their sexual behavior and seeking care. Some of the men having sex with men may be male sex workers (MSW), clients of sex workers, or not involved in sex work at all. Of these groupings, MSW and their clients are potentially at heightened risk for HIV infection [45, 46]. Male sex workers usually exchange sex for money, goods or services with male or female clients. In Kenya, little is known about male sex work and prevention programs targeting MSW are limited. Research about sex work has thus far almost exclusively focused on female sex workers. Moreover, in many parts of the country, there is an established program of peer educators that specifically targets FSW with HIV prevention initiatives. To address the gaps in information needed to guide HIV prevention efforts, we conducted research to provide a deeper understanding and to explore social and behavioral characteristics associated with sexual risk behaviors among MSM who sell sex to men in Mombasa. These findings contribute to accumulating data highlighting the need to shift social and public health perspectives on MSW and also lay the foundation for HIV prevention initiatives.
1.9 References


44 Ferguson AG, Morris CN. Mapping transactional sex on the Northern Corridor highway in Kenya, Health & Place. 2007 June (13)2 504-19.


2. OBJECTIVES
2.1 General Objective

The general objective of this work is to identify sexual and reproductive health and HIV risks among key population groups in Kenya.

2.2 Specific Objectives

1—To identify factors associated with sexual and reproductive health and HIV risks among female sex workers in Mombasa and Naivasha, Kenya.
   a) — To assess the intersection of physical and gender-based violence and risk of HIV infection among female sex workers in Mombasa and Naivasha, Kenya.
   HIV prevention strategies have largely ignored the impact of violence on increased HIV risk. Few studies provide detailed descriptions of the vulnerabilities of female sex workers to sexual and physical violence, and how it impacts on their HIV risk. Addressing violence and vulnerabilities faced by female sex workers can mitigate the risk of HIV infection and poor SRH outcomes.
   b) — To assess the acceptability of the diaphragm among female sex workers and women attending sexual and reproductive health services in Mombasa, Kenya.
   Understanding experiences of diaphragm users has the potential to inform the development and promotion of female-controlled devices. If proven acceptable, safe and effective the diaphragm could be an addition to female controlled barrier method of preventing sexually transmitted infections and pregnancy.
   c) — To assess contraceptive needs and unmet need for contraception among female sex workers in Mombasa and Naivasha, Kenya.
   Reproductive health interventions reaching female sex workers are typically more focused on the increased risk of sexually transmitted infections and pay little attention to heightened risk of unintended pregnancy. Available data show that reliance on male condoms, coupled with inconsistent use by female sex workers could potentially result in a higher unmet need for contraception and infection with STIs. Documenting patterns of contraceptive use and unmet need for contraception could potentially help to meet the broader reproductive health needs of female sex workers.

2—To assess factors associated with increased risk for HIV among male sex workers in Mombasa, Kenya.
   a) — To assess determinants of sexual risk among men who sell sex to men in Mombasa, Kenya.
   The impact of male same-sex HIV transmission in Africa is increasingly acknowledged, however HIV prevention initiatives remain focused largely on heterosexual and mother-to-child transmission. Identifying risk factors — social and behavioral factors among a sub group of MSM could guide and address unmet HIV prevention needs.
3. METHODS

3
3.1 Study Period

This section provides background information about the research settings and methods used to accomplish the six studies reported in this thesis. The research activities took place between March 2005 and December 2008 in two parts of Kenya: Mombasa in the Coast Province and Naivasha in Rift Valley Province. The studies took place for between 3 months to 6 months depending on the study design. The study population involved in the studies comprised of female sex workers, male sex workers and HIV positive individuals.

3.2 Study Setting

Mombasa

Mombasa is the second-largest city in Kenya. Situated next to the Indian Ocean, it is a major regional economic centre, with important tourism, port, rail and industrial enterprises. The city also serves as the centre of the coastal tourism industry. The city has a population of about one million people [1] and covers about 100 square miles. Mombasa city is located on Mombasa Island, which is separated from the mainland by two creeks: Tudor Creek and Kilindini Harbour. Figure 3 show the four local administrative divisions in Mombasa.
Naivasha
Naivasha is a town in Rift Valley Province, Kenya, lying north-west of Nairobi. It is located on the shores of Lake Naivasha and along the Nairobi — Nakuru highway and Kenya — Uganda Railway. Naivasha is part of the larger Nakuru District. The town has an urban population of approximately 400,000 inhabitants [1]. The main industry in Naivasha is agriculture, especially floriculture. Naivasha is also a popular tourist destination. Hell's Gate National Park and Longonot Crater within the Longonot National Park are nearby tourist attractions.

Mombasa and Naivasha are important commercial centres due to the port and tourist trade in Mombasa and to truck drivers and seasonal workers in flower farms in Naivasha. The East Africa transport corridor linking Mombasa with Kampala in Uganda passes through Naivasha, which is a main truck stop [2]. These settings were selected as they each have a concentrated sex worker and PLHIV population (especially in Mombasa), but the setting and client groups vary considerably, with these differences likely to provide important insights. The locations are about 500 km apart; Naivasha is smaller but has a large migrant worker population from all over Kenya, attracted by its flower and other industry. Mombasa, on the other hand, is a port city and popular tourist destination.
3.3 Study Design

A number of studies were undertaken to meet the stated objectives. Much of the data is reported through qualitative research—in-depth interviews (IDI) and focus group discussions (FGD), whereas quantitative research was also obtained through cross-sectional survey. Qualitative methods were used to unravel target audience’s range of behaviour and their perceptions to specific health issues and to obtain information that could not be elicited using quantitative methods. Qualitative research focuses on developing a comprehensive understanding of how people perceive, make sense of, and give meaning to their experiences. In this thesis, qualitative methods helped understand complex human behaviour in the reported studies. By connecting qualitative methods to quantitative data, the studies enriched people’s behaviour with words and actions.

1. Qualitative methods

Focus Group Discussion (chapter 4.1; 4.2; 4.3; 4.4): The focus group is a well-established method of social inquiry, taking the form of structured discussion that involves active participation and refinement of participants’ views and ideas. The technique is particularly valuable for gathering information which gives rise to divergent opinions, consensus or which involve complex issues that require to be explored in depth. By engaging participants and interacting with them on different topics, the technique serves to capture information on participants’ perceptions and views on themes relevant to a particular enquiry. The group interactions are usually facilitated by the moderator or researcher who guides the topics or questions for discussion. A typical format involves a relatively homogenous group of around six to twelve people who meet once, for a period of around an hour and a half to two hours. To understand the perceptions, attitudes and practices of our study population, we conducted a total of 16 FGDs (Women FGDs, n=12; Men FGDs, n=4) which took place with between 7—12 participants aged 16—49 years.

Utilising group discussions presented many advantages. One major advantage is that we were able to understand the most complex situations among marginalised or stigmatised population groups in a holistic manner. The community of female and male sex workers who are otherwise a hidden and hard to reach shared their perceptions on a variety of issues in great depth. The group setting motivated participants who otherwise may not have discussed their experiences in such openness and at length. Although we successfully elicited rich data, it is worth noting that FGDs have limitations. The discussions may sometimes be biased, due to the fact that the participants (beneficiaries) of health programs may be subject to an effect of dependency and will likely generate a positive judgement a priori. In the aforementioned studies, the effect of dependency may have influenced participants to respond in a particular way because some participants were enrolled in health programmes nested within studies. Also a range of sex worker groups were sampled to enable the study to capture diverse experiences, however
some more hidden groups of sex workers may not have been reached and therefore their opinions excluded. Similarly, the absence of data from clients of sex workers may limit the ability to comprehend their motives for violence contraceptive use and unprotected sex [chapter 4.1, 4.2, 4.3, and 4.4]. However, for all the studies, theoretical saturation (the point in data collection when new data no longer bring additional insights to the research questions) was achieved for the main themes and sub themes covered, suggesting these findings may be comparable to similar groups in Kenya.

2. **In-Depth Interviews**

In-depth interviewing (chapter 4.2; 4.4; 5.1): This is a qualitative research technique that involves conducting intensive individual interviews with one or a small number of respondents to explore their perspectives on a particular idea, program, or situation [3]. Particular individuals are selected to participate in in-depth interviews when detailed information about a person’s thoughts and behaviours or experiences may provide additional important information. In-depth interviews are often used to provide context to other data (such as outcome data), offering a more complete picture of what is happening and why. Therefore, to reach specific objective 1 [b], five in-depth interviews were carried out with women who reported violent episodes with their partners as a result of using the diaphragm. Whereas, to meet specific objective 2 [a] to assess determinants of sexual risk among men who sell sex to men in Mombasa, Kenya, 10 IDIs were conducted with a select group of MSW participating in an initial Phase I quantitative survey [4]. In chapter [5.1], 23 IDIs with sexually-active adults receiving antiretroviral treatment (ART) in Mombasa were conducted to understand their sexual behaviour. For all the IDIs [chapter 4.2, 4.4, 5.1], detailed context specific information was collected on various topics and themes explored. More so, IDIs provided detailed and valuable information, particularly when supplementing with other methods of data collection. For the stated studies, saturation was reached for the main themes covered — the same stories, issues, and topics kept emerging after a set number of interviews.

3. **Quantitative Design**

Cross-sectional study (Chapter 4.3; 5.2): Specific objective 1 [c] was achieved using a mixed-method cross-sectional study design. Elements of qualitative and quantitative design were combined (structured survey and focus group discussions) in a sequential manner. Mixed method data collection techniques are useful in that they accord the opportunity to use multiple sources of information to verify and gain insight into the social world [5]. The ability to interpret findings can be increased in a mixed method design—the strengths of one method are used to counterbalance the weakness of the other method. Mixed method designs are essential in providing interrogated results. In our studies, we were able to yield
comprehensive empirical evidence for objective 1 [c]. Similarly, in [chapter 5.2] study participants were recruited for a cross-sectional survey (no mixed method), using modified snowball sampling, through Community Health Workers (CHW) and HIV-positive Peers from Post Test Clubs (PTC).

3.4 Sampling Procedures

A well-defined sampling strategy can provide unbiased and reliable results. To achieve study objectives, a variety of sampling procedures was used depending on the study design and target population. The aim of the quantitative approach was to test pre-determined hypotheses and produce generalizable results. While qualitative studies aimed to provide explanation and understanding of underlying complex social and behavioural issues [6]. The use of quantitative and qualitative approaches in this thesis generated rich, detailed data that provided context for participant’s health behavior. The fundamental underpinnings of the two approaches is summarised in Table 5.

<table>
<thead>
<tr>
<th></th>
<th>Quantitative</th>
<th>Qualitative</th>
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<tbody>
<tr>
<td>Philosophical</td>
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<tr>
<td>foundation</td>
<td>reductionist</td>
<td></td>
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<tr>
<td>Aim</td>
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<td>and objective</td>
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Source: Oxford University Press 1996

Qualitative studies

To reach specific objective 1 [a] and [c] [chapter 4.1; 4.3], targeted snowball sampling was utilized. Snowballing – also known as chain referral sampling – is considered a type of purposive sampling. In this method, participants or informants with whom contact has already been made use their social networks to refer the researcher to other people who could potentially participate in or contribute to the study [7]. Snowball sampling is often used to locate and recruit “hard to reach and hidden populations”. In [chapter
4.1; 4.3] peer-educators or informants with whom contact had already been made used their social networks to refer to the study potential participants. Identified peer educators spread the word that a team of interviewers could be found at a secure site and that they were keen on speaking with sex workers. Interested women approached the interview team. Those who met the study inclusion criteria (FSW aged 16-45 years) were invited to participate at random in the FGD. Altogether, 8 FGDs (Naivasha, n=4; Mombasa, n=4) were implemented.

In (chapter 4.2; 4.4; 5.1) purposive sampling, was used, aiming to select participants (for IDIs and FGDs) who were most likely to provide detailed information and share their experiences openly. Study staff made a subjective assessment of the likelihood that participants would share their experiences openly in focus group discussions and according to preselected criteria in the in-depth interviews. Purposive sample sizes are often determined on the basis of theoretical saturation.

For specific objective 2 [a], study staff identified candidates for either group or individual discussions from among those participating in the Phase I survey. In this process (non-random purposeful selection) staff made a subjective assessment of the likelihood that participants would share their experiences openly. Men were identified for pre-determined FGD and IDI sub-groups (men who have sex with both men and women; men who have sex with men only; men living with a male partner; younger sex workers (16—24 years); men older than 25 years; men who sell sex to Kenyans only; men who sell sex to international tourists; men tested for HIV; men seeking clients in multiple venues; and men in high socio-economic strata).

Further, identification and definition of these subgroups was based on study staff’s knowledge of study participants and on formative assessment consultations with MSWs conducted prior to implementation of this study. Whereas to achieve specific objective 1 [b], study staff used their knowledge of study participants to recruit FGD and IDI participants from among women who participated in Phase 1 study, a six-month cohort study, that assessed diaphragm continuation rates and factors associated with diaphragm use [8]. Women who had disclosed diaphragm use to their partners were asked for permission to contact their partners. Five focus group discussions took place with between 7 and 12 participants (total of 39 women and eight men). Each group comprised either sex workers; unmarried women from SRH clinics; married women from SRH clinics; women who had withdrawn from the study or missed the six-month study visit; or men. Additionally, in-depth interviews were held with the five women who reported having experienced violent conflict with their partners.

In [chapter 5.1] participants were selected using stratified purposeful sampling. This method selects samples within samples, by choosing cases that vary on a key dimension (i.e. cases nested within specific stratum) [9]. A random sub-sample of participants in a cohort study, were selected from individuals with varying condom use, sexual partners HIV status and based on self reported information given at the time of ART initiation. From the study records, three people were chosen from those reporting inconsistent
condom use with HIV-negative partners and four from each of the following groups: consistent condom use with HIV-negative partners; consistent condom use with partners of unknown HIV status; inconsistent condom use with partners of unknown HIV status; consistent condom use with HIV-positive partners; and inconsistent condom use with HIV-positive partners.
Quantitative studies

Non probability sampling (chapter 4.3): To meet specific objective 1 [c], targeted snowball sampling approach was selected over other sampling methods given that constructing an adequate sampling frame of female sex workers and identifying their locations is not possible [9-11]. In this study, prior to initiating participant recruitment geographic and ethnographic mapping was undertaken to select target group members in specified subcategories. Data collection commenced by interviewing sex worker peer educators known to the researchers in order to understand the networks of other target group members. After initial interviews were completed, peer educators spread the word about the study and that study interviewers were keen on speaking with female sex workers. Interested women then approached the interview team. Those who met the study inclusion criteria (FSW aged 16—45 years) were invited to participate at random in either the survey or FGD. Participation in one type of interview precluded participation in the other. The researchers then collected survey data, and obtained information on where additional target group members could be found. Participants were recruited at random in the survey until pre-determined size had been achieved. Whereas in [chapter 5.2] a modified snowball sampling, implemented through CHW and HIV-positive Peers from PTC were used. Four CHWs from each of Mombasa’s four districts (n=16) were asked to recruit 20 PLHIV each. Five Peers from eight PTCs (n=40) across the city were each asked to recruit 12 PLHIV. Using this method, 698 PLHIV were recruited from the community. An important limitation of snowball sampling technique is that sample target group members are likely to provide information only on other target group members who are in their own social, economic, and/or sexual network. Thus, broader interpretations of study findings must be made with caution — the extent for instance that contraceptive use, risk-taking and/or protective behaviours compare across different networks may have not entirely been captured.

3.5 Data Management and Analysis

Depending on study design and resources (time, manpower and financial resources) various methods for data collection and analysis were used. Detailed information is presented in chapters 4 and 5 in which aspects of data management and analysis are outlined. In general the following applied:
Qualitative studies

A standardised interview guide was developed for focus group discussions and in-depth interviews. The guides with open-ended questions and probes were adapted for IDI and FGDs. During data collection, FGD and IDI were recorded (manually or digitally), uploaded to a laptop computer (where a digital recorder was used), transcribed verbatim, and translated from Swahili to English by the qualitative research team of either the moderator, interviewer or note taker. Transcriptions and translations were reviewed for quality by the research team. A content-driven theme approach was used for analytic review of the data—transcripts were read and re-read to identify recurrent themes and to develop a coding tree. Once all the transcripts were coded, memos and display matrices were developed to examine each code in detail for sub-themes, nuances, and patterns across the interviews. The analysis team performed qualitative analyses with NVivo v. 7.0 (QSR International Pty Ltd) and Atlas ti version 5.0 (Berlin, Germany).

Quantitative studies

For objective 1 [c], a standard questionnaire was developed to capture information on participants’ socio-economic status, fertility desires, unmet need for contraception, condom use, HIV knowledge and experiences relating to the use of family planning (FP) methods in the past 30 days. Data collection tools were pre-tested and administered in Swahili. Prior to survey implementation, research assistants were trained on quantitative and qualitative research methods, survey data collection tools, research ethics and on study protocol compliance. A study monitoring system was put in place to ensure study activities were uniform across sites and among data collectors.

All interview data were double entered into EpiData v. 3.1 (EpiData Association) by trained data entry specialists. Data were then cleaned and queried using Stata v. 9.0 (StataCorps). Descriptive data analyses were conducted and verified by an independent analyst before being considered final. Data analysis is restricted to descriptive statistics only, and no probability-based inferential statistics (such as comparison testing or regression analysis) were calculated.

Data management in [chapter 5.2] included data being entered into handheld computers (Dell Axim X 51) and then uploaded into Microsoft Access 2003 using Perseus 7.0.044 software. The data were analyzed on two levels (respondent-level and partner-level) using Intercooled Stata 8.0 (Stata Corporation, College Station, Texas, USA).
3.6 Research Ethics

The study protocols were submitted for review and approval to the Kenyatta National Hospital Ethics and Research Committee (KNH-ERC) and the National Council for Science and Technology (Government of Kenya) (chapter 4.1; 4.2; 4.3; 4.4; 4.5; 5.1). For selected studies, additional approval was obtained from the Population Council, Institutional Review Board (IRB), and the Family Health International’s Protection of Human Subjects Committee. Written informed consent to interviewing and audio recording of responses was obtained from all interviewees. All interviews were done in central locations such as in drop-in-centres and identifying details altered. Prior to implementation of the studies, stakeholder and community consultations were made with various representatives of study participants. During these meetings, the purpose and procedures of the study was explained and input and cooperation from community members solicited. Study personnel received appropriate training and monitored implementation of ethical conduct of the studies.
3.7 Data Dissemination

The following manuscripts have been published and provide the basis for this thesis:


3.9 References

4. RESULTS: FACTORS ASSOCIATED WITH SEXUAL REPRODUCTIVE HEALTH AND HIV RISKS

Female sex workers 4.1, 4.2, 4.3

Male sex workers 4.4
Article 1

4.1 Sexual and physical violence against female sex workers in Kenya: a qualitative enquiry

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Sexual and physical violence against female sex workers in Kenya: a qualitative enquiry

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Abstract

Few studies in Africa provide detailed descriptions of the vulnerabilities of female sex workers (FSW) to sexual and physical violence, and how this impacts on their HIV risk. This qualitative study documents FSW's experiences of violence in Mombasa and Naivasha, Kenya. Eighty-one FSW who obtained clients from the streets, transportation depots, taverns, discos and residential areas were recruited through local sex workers trained as peer counsellors to participate in eight focus-group discussions. Analysis showed the pervasiveness of sexual and physical violence among FSW, commonly triggered by negotiation around condoms and payment. Pressing financial needs of FSW, gender-power differentials, illegality of trading in sex and cultural subscriptions to men's entitlement for sex sans money underscore much of this violence. Sex workers with more experience had developed skills to avoid threats of violence by identifying potentially violent clients, finding safer working areas and minimising conflict with the police. Addressing violence and concomitant HIV risks and vulnerabilities faced by FSW should be included in Kenya's national HIV/AIDS strategic plan. This study indicates the need for multilevel interventions, including legal reforms so that laws governing sex work promote the health and human rights of sex workers in Kenya.

Keywords: Kenya; female sex workers; violence; clients; HIV/AIDS
Introduction

Female sex workers (FSW) in Kenya, as in many other parts of Africa, are particularly vulnerable to HIV and other sexually transmitted infections (STI), unintended pregnancies and sexual and physical violence (Elmore-Meegan, Conroy, Agala, & Bernard, 2004). HIV prevalence in recent studies among FSW in Kenya ranges between 24 and 47%, considerably higher than the current prevalence of 7% in the general population (Fonck et al., 2000; KAIS, 2007; Kaul et al., 2004; Kimani et al., 2008; Luchters et al., 2008; McClelland et al., 2010; Simonsen et al., 1990). Overall, rates of HIV infection have declined in recent years in Kenya, a trend also noted among sex workers, where reductions in prevalence predated those in the general population by over a decade (Kimani et al., 2008). No declines, however, have been noted in levels of violence among sex workers in the country, with about a third reporting recent sexual violence and 12—17% physical abuse (Chersich et al., 2007; Geibel et al., 2008; Luchters et al., 2008; Schwandt, Morris, Ferguson, Ngugi, & Moses, 2006). Risk for HIV acquisition may be increased during an episode of sexual violence, but more importantly these risks are raised indirectly because an experience of violence can increase future high-risk sexual behaviours (UN Report, 2010; WHO, 2005). These effects are likely heightened by the stigma and social vulnerability experienced by FSW (Caceres, Aggleton, & Galea, 2008).

Exchanging sex for money, goods or other favours is common with 5.5% of Kenyan women reporting this in the past year (Kenya Demographic and Health Survey [KDHS], 2003). An enumeration study estimated that there were 5600 sex workers along one trucking route in Kenya (Ferguson & Morris, 2007). Direct comparisons between enumeration studies and, indeed, other aspects of sex work, are difficult, however, as sex work is markedly heterogeneous. This ranges from “formal” sex work in organised establishments such as escort agencies and massage parlours, to “informal” sex work on the street, or at bars and truck stops. Transactional sex with a non-primary partner, motivated largely by material gains, is even commoner, but the majority of these women do not self-identify as sex workers (Robinson & Yeh, 2008).

As in many parts of the world, national and municipal by-laws in Kenya criminalise sex work (Government of Kenya [GOK], 2008). Often, only sex workers not clients are arrested and taken to court for “loitering for the purpose of selling sex”, “importuning” and “indecent exposure” (FIDA Kenya, 2008; Ngugi, Morris, Moses, Gikuni, & Schwartz, 2004). Criminalisation, as noted in a recent UN General Assembly Report, “represents a barrier to accessing services ... leading to poorer health outcomes for sex workers” and “diminish[es] the ‘bargaining power’ of sex workers in choosing clients and negotiating condom use” (UN Report, 2010). Though the adverse effects of Kenyan anti-prostitution laws are well documented (FIDA Kenya, 2008; Okal et al., 2009), there are no reports, to our knowledge, that these laws curb sex work supply or demand in any way.
This paper examines the social and legal contexts that underpin the high levels of sexual and physical violence that pervade sex work in Kenya. The experiences of FSW related here serve to illustrate some of the intersections between violence and HIV, and the importance of violence in the compendium of HIV prevention.

**Methods**

**Study sites and interview methods**

Focus-group discussions (FGD) were held with FSW in Naivasha, Rift Valley Province and Mombasa, Coast Province in 2007. These locations are important commercial centres due to the port and tourist trade in Mombasa and to truck drivers and seasonal workers in flower farms in Naivasha. The East Africa Transport corridor linking Mombasa with Kampala in Uganda passes through Naivasha, which is a main truck stop (Ferguson & Morris, 2007). These settings were selected as they each have a concentrated FSW population, but the setting and client groups vary considerably, with these differences likely providing important insights. The locations are about 500 km apart; Naivasha is smaller but has a large migrant worker population attracted by its flower and other industry. Mombasa is port city and popular tourist destination. Initially, the study was designed to explore strategies for addressing FSW’s unmet need for contraception. However, their concerns about violence were pre-eminent in the discussions and formed the basis of this paper.

Women who reported current sex work, defined as “providing sexual services in exchange for money or other material compensation as part of an individual’s livelihood”, and were 16—49 years were eligible for study participation. FSW were recruited through local sex workers trained as HIV/AIDS peer educators and through snowball sampling (Heckathorn, 2002). Eight FGD took place with 10—12 participants (total 81). To encourage open discussion and reduce inhibitions among participants, FSW were grouped by similar age, site of recruitment and type of sex worker (full or part time).

An open-ended FGD guide addressed three broad areas: work, health and contraceptive use. Questions were asked about sex workers' health problems, awareness of HIV and the dynamics of their relationships with clients. All FGDs were conducted in Swahili by a female duo of focus-group moderator and note taker, and were tape-recorded and transcribed verbatim. Transcripts were coded using QSR NVivo 7 Software© and analysed by two researchers using content and thematic analysis (Patton, 2002; Silverman, 2004). Transcripts were read and reread to identify recurrent themes and develop a coding tree, applied to the text. After coding, memos and display matrices were developed to examine each code for sub-themes, nuances, apparent contradictions and patterns across the interviews.
**Ethical considerations**

All interviews were done in central locations such as in drop-in-centres and identifying details altered. Participants received compensation for transportation costs (KSH 300; US$4.30). Family Health International’s Protection of Human Subjects Committee (USA), the Kenyatta National Hospital-Ethical Review Committee (Kenya), and the National Council for Science and Technology (Government of Kenya) approved the study protocol.

**Findings**

**Conflict and violence**

Conflict and violence were salient themes in the discussions, and they emerged from a general research question, “what health problems do women like you face?” In response, sex workers retold their dilemmas and risks of trading in sex and mentioned rape, sex without condoms, painful and “rough” sex in the vagina and anus, police arrest and physical beatings by clients as common experiences. For example:

...a man refuses to use a condom and does not even pay you after sex and he will use you badly,

...it is normal that the sexual act should be gentle and slow, but here you find its turning into something like war...

Almost all participants reported experiencing physical or sexual violence in their working lives. FSW drew direct links between violence and the fact that sex work inherently commoditises sexual exchange and thus gives men undue advantage. When articulating this asymmetrical relationship, FSW frequently used terms like they “control”, “humiliate”, “dishonour” and “endanger us”. Participants from Mombasa and Naivasha expressed similar sentiments, affirming dangers they are exposed to and the low status that clients accord them. Informants framed this experience broadly as “being used badly” by clients. One respondent put across this point as:

We have a lot of problems, we are beaten, we are used badly just because a man has spent money on you and thinks he can do anything he wants ...

Consistent with the above, a critical view that emerged from FSW's narratives was a depiction of women’s vaginas as “valueless” objects that are “stepped on” and as “toys” to be played with. Clients were said to, “spoil your goods”, and:

...it's like he has picked a toy and plays with it, he will do anything he wants, like it has no value and even if you complain that you are tired, he will just go on refusing to listen to your please.

Another woman commented that:
He really steps on it (vagina), plays and toys with it and when he is done, you won’t even want another client that night.

These depictions clearly show the objectification of FSW’s bodies and the physical and emotional trauma they experience. There were also reports that clients sometimes underpay sex workers, deny them payments and abandon them in remote locations after having sex.

Men’s desire for unprotected sex and arguments over payment often triggered conflict, including threats, intimidation and violence. A participant observed that:

It’s like this … you have asked for and been paid the five hundred shillings [S7], and you have discussed about condom use. The problem will be when you get to the room; he locks the door, keeps the key, and refuses to use a condom. If you ask to leave, he threatens you. So you end up having sex without any protection, and there is nothing you can do about it.

Some participants explained that sexual activity sometimes involved forced and non-consensual anal sex. This, according to the women, was often done as a means of repaying food and drinks consumed:

After a client buys you a meal or alcohol he uses you badly … He will say that instead of having sex the normal way he will want to enter the anus.

Further, cases of gang rape were not infrequent, with respondents portraying clients as conniving in these instances. One woman commented:

Sometimes you may have agreed to be with one client, when you go to an agreed place, he calls other men who then force you to have sex with them.

FSW mentioned a diverse range of clients and that the likelihood of violence varies across these groups. The clientele were described as ranging from ordinary fun-seekers, through to criminals, drug addicts and even “the diseased”. One participant stated that:

A client may have skin sores all over the body and you only notice this when he undresses and because of fear you mention it, but instead he beats you up and forces himself into you...

In some cases, violence had even more severe effects. FGD participants described the tragic fate of a sex worker accused of deliberately infecting a client with HIV:

...recently we buried a colleague who was stabbed to death by a client because of allegations she had infected him with HIV.

...they [clients] know this is a sex worker, so why kill her?

...yes, they [clients] also refuse to use a condom during sex.
These exchanges depict the unpredictability of sexual exchanges, in which latent conflicts with clients can erupt and have severe consequences. In addition to explicitly exerting male control, clients also used more subtle and covert methods to obtain unpaid or unprotected sex. FSW mentioned being drugged with alcohol or other substances.

One woman put this as:

There are some clients who may want to be malicious or plan cruel things. One can even put drugs in your alcohol so that he can have sex with you without a condom.

It was, however, also evident that FSW commonly use alcohol or drugs to boost self-esteem and thus enhance their negotiation skills. A bar-based respondent observes that:

Alcohol use is there but needs moderation ... it has to be for getting rid of shyness alone and you should never ever get drunk.

In the context of sex work, many respondents agreed that being intoxicated with alcohol or drugs negated safer sex practice, and increased the likelihood of a violent encounter.

Several previous studies (Plichta, 2004; Shahmanesh et al., 2009; Tjaden & Thoennes, 2000) have observed that among groups like sex workers, gender disadvantage and violence are often associated with poor long-term health outcomes and self-inflicted harm including suicide. More immediately, physical effects of violence can result in poor health and loss of ability to work (Rhodes, Simic, Baros, Platt, & Zikic, 2008; WHO, 2005).

One respondent explained it this way:

After being assaulted you will not be able to work the next day as you are sore all over, this work also interferes with periods [menstruation] ...

Despite these difficulties, FSW reported trying to overcome the physical consequences of violence as rapidly as possible to hasten their return to work.

Sex work and law

In Kenya, many local authorities elect to address sex work under their subsidiary legislation or by-laws. For example, Section 19 (m) of the Nairobi General Nuisance By-laws (2007) provides that “any person who in any street loiters or importunes for purposes of prostitution is guilty of an offence”. Sections 258 (m) and (n) of the Mombasa Municipal Council By-laws (2003) state that: “Any person who shall in any street or public place (m) Loiter or importune for the purpose of prostitution (n) Procure or attempt to procure a female or male for the purpose of prostitution or homosexuality ... shall be guilty of an offence” (FIDA Kenya, 2008). Notably, the Mombasa by-law also criminalises consensual male male sex. Backed by
these anti-prostitution laws, police harass, threaten, arrest, beat and sexually coerce sex workers. Police action also means that sex workers, especially street-based workers, are more mobile and often conduct hasty negotiations with clients centred mostly on financial agreements, less so on condoms. A participant explains:

... the man wants sex, Kahaba [sex worker] needs money there is no other discussion there.

Some FSW reported being taken to court, and being fined or imprisoned. Also a respondent noted:

At times, you get arrested by police for loitering in the streets at night, when you are arrested you are unable to take care of the children.

The majority of respondents believed that it was pointless seeking justice against perpetrators of violence. According to them, sex work is socially stigmatised and given its criminalisation, FSW are powerless and lack credibility to bring a charge against offenders. It was apparent that many were also reluctant to report cases for fear of being intimidated, blamed or for inviting prostitution-related charges. As a result, victims of violence often suffer in silence, as one informant said:

... if someone hits your face, they will obviously hurt you, you cannot work for a while but it’s embarrassing to discuss the issue with someone else let alone the police, you cannot tell anyone.

A few women though observed that decriminalising sex work would enhance seeking legal recourse against perpetrators of violence:

Sex work is not allowed and that is why when a man treats you badly, one is not able to report it. But if we were allowed and given a letter to do sex work, then one would be able to report cases of abuse by our clients and partners.

**Coping strategies to avert harm**

FSW devised several strategies to minimise the chances of being attacked, raped, arrested or robbed. They reported that the more experienced they were at sex work, the more able they were to proactively reduce hazards and respond to potentially dangerous situations. Experience assists FSW to make critical decisions like accepting or declining a client’s proposal or carefully assessing the safety of different locale. Often, sex workers resisted attempts to accompany clients to unfamiliar areas, rather tending to work from venues well known to them where they could easily call for help or escape. Some share stories about bad clients or work in groups where they can warn and protect each other against such clients.

Sex workers mentioned learning through their mistakes, to reduce vulnerability to harm. For instance, some limited alcohol intake in order to control their own or client’s behaviour:
I would rather take a soda so that I’ll be attentive to see and hear what is happening around me and make sure that the man uses a condom and he does not put a hole in it.

Also, despite the risks, a few FSW mentioned doing whatever it takes to have protected sex. Such women strongly acknowledged the importance of safer sex practices which they framed as “caring about life” and “caring for your family.” One said:

I think any sex worker who does not care about condom use has been left behind by time, nowadays sex workers care about themselves.

Some FSW covertly used female condoms to compensate for their inability to enforce male condoms. While others even mentioned using physical force to enforce condom use. One such participant mentioned “pushing off” clients who refused to use condoms. She stated:

I will ask him to come out if he refuses to use a condom or I simply push him out forcefully. You just struggle with him...

To mitigate the effects of police, FSW mentioned “negotiating” their way out of arrest or detention through payment of unofficial fines (a coded reference to bribes) or by extending sexual favours. FSW viewed acquiescing to police demands for sex without payment as preferable to being arrested. Some discussed the importance of showing compliance and cooperation with the police. Others with long-established networks are forewarned and escape before a police “crackdown”.

A few mentioned engaging in informal activities to supplement their income or to have flexibility in sex work. This included working as bar waiters, selling illicit brew or second-hand clothes. A previous study in Mombasa showed that FSW often supplement their earnings from sex work by working in the informal sector, reducing their reliance on income from sex work (Hawken et al., 2002).

Overall, despite the strategies mentioned here to minimise its effects, perpetration of violence against sex workers appears largely unpredictable and uncontrollable, shaped by the prevailing legal institutions and social norms. Intense policing and client violence alienate sex workers; make them easier targets and the sex markets risky and unstable; and ultimately HIV prevention is accorded relatively low priority (Sanders, 2004).
Discussion

The experiences of FSW in this study show that sex workers face a double but ultimately inseparable threat of violence from clients and law enforcement agencies. These violations deny sex workers’ claim to their individual human rights under current laws and frameworks. Criminalisation obstructs sex workers from reporting perpetrators of violence and seeking legal recourse after physical or sexual assault, which in turn serves to strengthen clients and police subjugation over them (Richter et al., 2010). Preventing violence against sex workers through legal reform with a regulated marketplace, based on sound public health evidence and human-rights principles rather than criminal and punitive sanction is required (UN Report, 2010; WHO, 2005). That FSW’s concerns centre on the more pressing immediate problems of violence and harassment must surely detract them from their ability to focus on relatively longer-term issues of HIV and other STI, even of pregnancy.

This study has limitations. Although use of two sites and sampling a range of sex worker groups enabled the study to capture diverse experiences, some more hidden groups of sex workers may have been missed. Secondly, the absence of data from men limits the ability to comprehend their motives for violence, which seem to hinge on maximising their buying power, either through coercion or force, and the subjugation of FSW. Finally, the discussion guide was designed to explore FSW’s unmet need for contraception and this shift in focus may have limited the depth and range of views we obtained. However, FSW’s reported experiences of violence were sufficiently detailed to provide important insights, and were surprisingly similar between Mombasa and Naivasha, suggesting these findings may be generalisable to other parts of Kenya and related settings.

In Kenya and much of Africa, HIV prevention has long been modelled at the level of individual behaviours, which, to some extent, operates on the assumption that behaviour is determined by a person’s own choice. By contrast, successful programmes against HIV among sex workers in many Asian countries, such as the Thai 100% condom use (Kerrigan, Moreno, Rosario, & Sweat, 2001) and the Sonagachi project in India (Basu et al., 2004; Jana, Basu, Rotheram-Borus, & Newman, 2004), made concerted efforts to alter the physical and social environments in which these individual behaviours are situated. Clearly, these structural factors whether political, economic or cultural directly or indirectly affect an individual’s ability to avoid risks and/or vulnerability to infection (Kerrigan et al., 2003; Swendeman, Basu, Das, Jana, & Rotheram-Borus, 2009). Moreover, the Asian findings show the importance of providing “community friendly” services that accord significant involvement to sex workers including community mobilisation, self-organisation and overall tolerance and acceptance of services (Basu et al., 2004; Jana et al., 2004). Where applied, such strategies have resulted in high levels of condom use, a reduction in
HIV prevalence among sex workers and seem eminently suited to alleviating the burden of violence among sex workers. In Africa, the lack of such interventions, at scale, remains a glaring omission.

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Article 2

4.2 Secrecy, disclosure and accidental discovery: Perspectives of diaphragm users in Mombasa, Kenya

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Secrecy, disclosure and accidental discovery: Perspectives of diaphragm users in Mombasa, Kenya

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Abstract

The diaphragm is receiving renewed attention as a promising female-controlled method of preventing HIV and other sexually-transmitted infections. It is anticipated that female-controlled technologies will reduce women’s biological susceptibility and assist in counteracting their sociocultural vulnerability to HIV. Understanding the subjective experiences of diaphragm users in different settings has the potential to inform the development and promotion of such methods. This paper explores the perspectives of female sex workers and women attending sexual and reproductive health services in Mombasa, Kenya. Data are reported from focus group discussions and in-depth interviews with women and men, following a prospective study investigating diaphragm continuation rates over six months. Discussions highlighted covert use of the diaphragm, during sex work or with casual partners, and coital independence as favourable attributes. These features were especially pronounced compared with male condoms. Few difficulties with diaphragm use were reported, although its insertion and removal occasionally presented problems. Many women—especially those in long term partnerships—wished to disclose its use but found the disclosure process highly problematic. Accidental discovery often resulted in partner conflict. Although future uptake of the diaphragm may be high in this setting, its use may be limited to certain types of relationships and relationship context.

Keywords: Kenya, diaphragm, acceptability, gender
Introduction

There is a long-neglected unmet need for female-controlled methods for preventing HIV and other sexually-transmitted infections (STIs) (UNAIDS/UNFPA et al. 2004, UNAIDS/WHO 2004). Women are biologically more susceptible to infection with STIs than men. Moreover, social and economic factors increase their vulnerability, especially in settings with stark gender and economic inequities (UNAIDS/WHO 2004). Increased vulnerability together with a lack of prevention options for women limits the impact of current initiatives to reduce transmission of HIV and other STIs.

In response to this, concerted efforts are being made to develop technologies that are under the control of women and can potentially be used without their partner’s knowledge. Research has focused on vaginal microbicides and cervical barriers, such as the diaphragm, which may be used without male co-operation and/or knowledge (Harvey et al. 2003, Minnis and Padian 2005). These methods are not intended to replace condom use, but rather to augment existing options as it is likely that female and male condoms will long remain the most effective individual-level method of protection (Foss et al. 2003).

Limited evidence from observational studies suggests that the diaphragm protects against STI and their sequelae, including gonorrhoea (Austin et al. 1984, Rosenberg et al. 1992), pelvic inflammatory disease (Wolner-Hanssen et al. 1990) and cervical dysplasia (Becker et al. 1994). This is biologically plausible—the cervix being a primary entry site for STIs such as HIV, Neisseria gonorrhoeae, Chlamydia trachomatis and the human papilloma virus (Moench et al. 2001). Ongoing trials aim to determine its protective efficacy against HIV.

The diaphragm is one of the oldest contraceptive methods and was formerly quite widely used. It was often used with a spermicide and studies to date have largely investigated the contraceptive efficacy of the diaphragm and spermicide together. Less evidence is available of unintended pregnancy risks with the use of the diaphragm alone; however, a recent Cochrane review comparing contraceptive efficacy of the diaphragm with and without spermicide found no difference in efficacy (Cook et al. 2003). In recent years, the diaphragm has not been included in the method mix in family planning services in many countries, including Kenya (United Nations 2003). Therefore, at present, most women and health providers are not familiar with it. However, in recent times spermicide use among women at high risk for HIV has been discouraged, since nonoxynol-9 was found to be associated with increased risk of genital lesions which may increase the risk of acquiring HIV infection (Wilkinson et al. 2002).
The perspectives of diaphragm users and population-level uptake are likely to be context specific, as trade-offs between positive and negative attributes are shaped by social and cultural practices. Diaphragm uptake will also depend on available options for contraception and for protection against HIV and other STIs, as well as on the degree of protection the device confers. The aim of this paper is to explore the subjective experiences of women and men following diaphragm use in Mombasa, Kenya. Documenting user perspectives in diverse settings may inform the design of diaphragm studies, the tailoring of diaphragm promotion and the future development of female-controlled prevention technologies.

**Methods**

**Study setting**

The study took place from January 2004 to July 2005 in a public-sector primary health clinic in Chaani, Mombasa. Mombasa, on Kenya’s Coast province, is a major regional economic centre, with important tourism, port, rail and industrial enterprises. The road linking the Mombasa seaport with the capital city Nairobi passes through Chaani, which is largely inhabited by a migrant population, many of whom work at the nearby port or as small scale traders, loaders and truck-drivers. This part of the city has a high burden of HIV and other STIs, much of which is borne by female sex workers (Luchters et al. 2006).

**Study participants**

Two groups of women were invited to participate: women sex workers approached by peer educators in bars, guesthouses and other community settings; and women recruited from sexual and reproductive health (SRH) services at Chaani clinic. Women attending such services were informed about the study during the morning health talks and patient encounters. In these interactions, trained health workers outlined study procedures, showed women the device and asked them to decide if they were interested in participating. Those interested, received more detailed information from nurses at the clinic and were referred to study staff.

To be eligible for the study, women had to be aged 18 to 49 years, sexually active, resident within the study area for at least one year and considered likely to remain in the area for the next six months. All those enrolled had expressed willingness to try using the diaphragm.

Women who were pregnant, planning a pregnancy in the next six months, allergic to latex or had a previous hysterectomy were excluded from the study.
This study consisted of two phases. Phase 1, a six-month cohort study, assessed diaphragm continuation rates and factors associated with diaphragm use. Thereafter, qualitative research methods were used to examine diaphragm users’ perspectives (Phase 2). These form the basis of this paper. Written informed consent was obtained at study entry and prior to the qualitative phase. The Kenyan ethics and research committee and the ethics committee of Ghent University, Belgium, approved the study.

Phase 1

Following enrolment, participants were fitted with a latex diaphragm and received practical guidance on its insertion and removal. Women were instructed that the diaphragm should be inserted up to 30 minutes before intercourse, left in place for six hours after intercourse and removed within 24 hours of insertion. They were discouraged from using lubricants or spermicide-containing products and were told to use only water during insertion and cleaning of the diaphragm.

Study participants received individualised counselling to assist them to reduce their risk of acquiring HIV and other STIs, and were offered HIV testing and counselling. At enrolment and subsequent visits they were informed that the protective efficacy of the diaphragm against STIs (including HIV) was unknown. Male condoms were promoted and provided free of charge at enrolment and at each subsequent visit. At study visits, women whose male condom use had decreased were identified and received additional counselling. Peer educators made specific efforts to reach study participants in the community and provide them with condoms. Although women were informed that the diaphragm offers protection against pregnancy, they were encouraged to use more effective contraceptive methods.

Structured interviews were used to collect demographic, behavioural and clinical data. At follow-up visits, the use of the diaphragm, condoms and contraception was assessed. Women reporting intimate-partner violence during the study were linked with a local service that provides confidential counselling and other supportive interventions.

Of the 185 study participants, 97 were sex workers and 88 were women enrolled at SRH clinics. None of the participants had previously used the diaphragm. Women were a mean 31.3 years (standard deviation= 7.6 years). Sex workers were less likely to be married and had fewer years of schooling compared with women from SRH clinics (6.8 years versus 9.9 years; P• 0.001). Median age at sexual debut was 16 years (inter quartile range15–19 years) for sex workers and
18 years (inter quartile range 16–20 years) in the other study group (P < 0.001). Eighty-two per cent of women (152/185) had at least one follow-up visit and 73% (135/185) completed the six-month study period. At the six-month visit, 55% (56/102) of the sexually-active women reported using the diaphragm with all sex acts in the previous month. No change was detected in the proportion of participants reporting consistent condom use at each visit. After six months, fewer sex workers than women from SRH clinics reported having disclosed diaphragm use to their partners (42%, 26/62 versus 67% 38/57; P=0.007). More detailed results and data on factors associated with diaphragm use, effects of diaphragm use on contraceptive method mix, and diaphragm safety and effectiveness are presented elsewhere (Luchters et al. 2007).

Phase 2

After Phase 1, all participants were contacted and asked if they were willing to participate in focus group discussions. Of the 135 women who completed six-month follow up, 119 (88%) agreed to participate. Having interacted closely with participants during the preceding six months, study staff had got to know many participants well. Based on this, they made a subjective assessment of which participants were most likely to provide detailed information and to share their experiences openly. Study staff asked women who had disclosed diaphragm use for permission to contact their male partners. Thirty men were contacted and invited to participate in a focus group discussion, eight of whom arrived on the scheduled date.

Groups were separated according to marital status, gender and site of recruitment. By increasing the homogeneity within groups, we aimed to encourage discussion of shared experiences and to reduce inhibitions. Five focus group discussions took place with between seven and 12 participants (total of 39 women and eight men). Each group comprised either sex workers; unmarried women from SRH clinics; married women from SRH clinics; women who had withdrawn from the study or missed the six-month study visit; or men.

The age of focus group participants ranged from 20–45 years. Additionally, study investigators were concerned that violence may be related to diaphragm use and in-depth interviews were held with the five women who reported having experienced violent conflict with their partners during Phase 1. These interviews explored the underlying reasons for the conflict and a potential relation with diaphragm use.

During group discussions, participants were given name tags with nicknames, to protect confidentiality. Discussants were requested to use the nickname or say 'my colleague' when
referring to other participants. Participants were asked to avoid discussing proceedings after the sessions. Electronic data are stored on a password-protected computer and contained no identifying information.

Generally, participants took an active role in the discussions. They spoke freely and displayed interest in the issues. Focus group discussions are a particularly appropriate method of data collection in Mombasa. They succeed in producing data through interaction and discourse in a group setting that one-to-one interviews may fail to generate (Kitzinger 1995). Vikao (same sex group discussions) are a popular activity amongst coastal Swahili people. Outside the domestic domain, men and women participate in a social environment in which same-sex group discussions are a significant forum for reinforcing group identification and increasing social cohesion.

Trained researchers facilitated the group discussions in Swahili, the common language of the coastal region of Kenya. A standardized interview schedule was used, with open-ended questions followed by specific probes. Topics covered included perspectives on diaphragm use, sexual pleasure, gender relations, partners’ response to the method and concerns about HIV, STIs and pregnancy. Group discussions were tape-recorded, transcribed verbatim, translated to English and analysed using MAX QDA22 (Bonn, Germany). Transcripts were coded according to a coding structure developed after repeated review of the transcripts using text word searches. A coding report was generated that featured all the codes and associated text.

Results

The content analysis highlighted several themes concerning women and men’s subjective experiences with the diaphragm. These included the convenience of the diaphragm from a practical perspective; its perceived efficacy; the pivotal role of sexual pleasure in decisions about protection; and secrecy and disclosure.

Many of these themes are underscored by gender power issues and reveal how sexuality and family planning decisions in this setting are often areas of contestation between men and women.

Convenience of the diaphragm

Very few women experienced difficulties with the practical attributes of the diaphragm (insertion, removal, cleaning and storage). However, the timing of inserting and removing the diaphragm in relation to women’s daily activities was raised as an important issue. Agnes, a 26-year-old married woman, described her difficulties with timing diaphragm insertion while at the same time maintaining its secrecy:
“The bad thing about the diaphragm is that when my husband comes home and he is ready, and you want to use it [the diaphragm], you are expected to insert it earlier. So when he comes and you have not inserted, it becomes difficult, because he might find out.”

Others, such as Lillian (29 years old), also reported problems with timing the removal of the diaphragm and the constraints of her workplace:

“Personally, I have a problem with the diaphragm, you know I go to work and sometimes I leave the house at six o’clock. I cannot remove it in the morning while bathing since I can get an infection or get pregnant because there is a fixed time that it should remain inside. I am forced to go to work while I have it inside. So, I go to work in the morning and wait up to around 10.00am to go back to the house and remove, wash and store it. So I feel for those of us who leave for work very early.”

Christine, a 33-year-old unmarried woman, experienced a similar problem:

“Some work places don’t have good toilets. For example, the company that I work for sometimes has no water in the toilet. So what happens when one has to remove the diaphragm there, will I leave it dirty? There’s always that worry of how it will be at work when it’s time to remove it.”

Like many others, Christine raised concerns about personal hygiene, highlighting her discomfort in leaving the diaphragm in place for six hours after intercourse. Having semen in the vagina caused women to feel uncomfortable and unclean. Mary, a school teacher, believed that this was the reason many of her female colleagues shunned the diaphragm:

“They say it is unclean to use it since the diaphragm traps semen inside the body. ….They say it is dirty, because you insert your fingers at night and in the morning also to remove it.”

Perceived efficacy in preventing sexually-transmitted infection and in enhancing sexual pleasure

Group discussions with women highlighted the diaphragm’s perceived efficacy against STI, but also its contribution to sexual pleasure.

Some women thought the diaphragm had been highly effective in minimising their risk of infection. For example, a 26-year-old female sex worker reported decreased STI and associated this with diaphragm use:

“When I was using condoms only, I got infections but since I started using the diaphragm I have not been infected. If you find me sick, it will not be an STI, it will be something else. For
me the Diaphragm is good. Before I got it, I used to get infected with gonorrhoea because I am a sex worker and I have multiple sexual partners who I hook up with in clubs. Sometimes the condom bursts just as he is about to ejaculate and at other times the clients refuse to put on the condom. You may try to shake him off, but he may be too strong for you. But since I started using it [diaphragm] I have not had such problems.”

The diaphragm, as she noted, provided an additional protective option to condoms, which were unreliable and unfeasible in some of her sexual relationships.

While perceived protection against STIs was an important aspect of the diaphragm—particularly for women who saw themselves as at high risk—the implications for sexual pleasure received more attention in the focus groups. Both sex workers and women from SRH clinics appeared to place a higher emphasis on men’s pleasure than their own.

Women in long-term relationships often reported that their partners experienced heightened sexual feelings when using the diaphragm:

“When I insert it he tells me he gets more pleasure than before. You know he is young, so when he feels it inside, he tells me that he did not feel like that previously.”

The only criticism of the diaphragm voiced by men was that it restricted their depth of penetration:

“When I asked him how he feels he said it is the same, but when he penetrates he feels there is something blocking him, so he does not reach where he always reaches when there is no diaphragm.”

In their focus group, men tended to agree that the diaphragm did not interfere with sexual pleasure; many simply felt that there was no difference when the diaphragm was used.

The diaphragm was viewed most positively by both men and women in comparison to the condom. Kazungu, a 37-year-old married man described his initial reaction to the diaphragm and how this had changed:

“I really criticized it [the diaphragm]. She told me that instead of the condom we use the diaphragm. But later when I tried it I realized that it was even better than the condom. Because with the condom you don’t get as much enjoyment, but with the diaphragm you really enjoy since you know you are using something that gives you “flesh to flesh” contact.”
The absence of the condom allowed men to experience a greater degree of intimacy. Unprotected sex was described as unrestricted; enabling their partners to experience a sensation of unrestricted sex. This was important for the clients of sex workers, but also for non-paying, emotional partners. Men also stressed the importance of ejaculating inside a woman—something the condom prevented. Karisa, a married 31-year-old man, explained why:

“The condom does not have pleasure, a woman does not feel pleasure so it will be difficult to convince her to use it. For most women the pleasure is to feel the semen, because when you ejaculate and she does not feel anything then it is just like when you come out without ejaculation.”

These ideas were supported by women who regarded the sensation of ejaculation as pleasurable, and even therapeutic, as Mercy (41 years old and married) noted:

“Some women believe that they cannot stay for a year without a man to lubricate her. There are some women who refuse when their husbands want to use the condom. They will say “I cannot have sex without my husband ejaculating in me. That is medicine for my body.”

The positive associations of the diaphragm versus the negative associations of the condom were not surprising. Informants raised the all too familiar concerns with the condom; particularly that it undermined trust within a relationship. Condoms were regarded as very necessary in extramarital relationships but inappropriate within more permanent relationships, where they symbolized a lack of trust. Given the particular difficulties with using condoms with boyfriends and husbands, women felt the diaphragm provided a useful alternative.

Although the diaphragm had distinct advantages over the male condom, it did not necessarily escape some of the same criticisms that were levelled at the condom. Most significantly, diaphragm use also symbolised a lack of trust within long-term relationships, perhaps even more so because the diaphragm was a virtually invisible device and could be used secretively. Mary, a school teacher, said:

“My colleagues who are teachers say it is for prostitutes, someone with a husband cannot use that, what for?”

Several of the women in the focus groups reported that their partners’ criticized their use of the diaphragm as it indicated that they did not trust their partners, or that they did not trust themselves. This concern—amongst others—introduces us to the apparent importance of the clandestine use of the diaphragm.
Secrecy and disclosure

A recurrent theme in discussions with women was their ability to use the diaphragm covertly, without their partner’s knowledge. This was an advantage for women whose partners objected to contraceptive or condom use. Josephine, 28 years old, emphasised this aspect:

“The diaphragm is good because I use it secretly. First he doesn’t want me to use the pills. He says that they cause high blood pressure. He cannot wear a condom. So I took the diaphragm. I am happy with the diaphragm because even if he doesn’t want me to use it, I insert it and when we have intercourse he doesn’t even know.”

For Josephine, like many others, the diaphragm provided an invisible method of contraception, allowing her to take control over her own fertility. Twenty-seven-year-old Jane had a similar viewpoint:

“In order to protect yourself, you don’t even need to tell him, you can just use the diaphragm without his knowledge, if you don’t intend to have more children. I don’t see the need of telling him, because when you tell him he will have so many reasons for not using contraception. I don’t even think he can feel the diaphragm when you have inserted it, so it is up to you as a woman to stay with your secret.”

The secrecy afforded by the diaphragm not only imparted power in sexual decision making, but a sense of empowerment in general. Amina, a 40-year-old married woman elaborated:

“First you should know that women have secrets; they can keep secrets even from their husbands. So, because we were born secretive, women can use the diaphragm to protect themselves without telling men. My secret is my own, alone. The man who will ever discover that I used the diaphragm; it will be up to him and his God.”

In the discussion groups, most women supported the idea of using the diaphragm secretively and withholding knowledge of it from their partners. They particularly liked the idea that this enabled them to avoid negotiating its use, thereby minimising potential conflict with their partners. Women who had paying clients were particularly enthusiastic about using the diaphragm as they felt it allowed them to have protected sex without having to negotiate condoms.

As a secretive device the diaphragm was especially beneficial for women who may be coerced into having unprotected sex. Grace, a 26-year-old married woman recounted her experiences:
‘My husband is a drunkard and he would not allow me to use a condom or a diaphragm. The diaphragm is my secret, when you think you have had sex flesh to flesh, you do not get my flesh. So I try to protect myself even if it [diaphragm] is not one hundred per cent. That is why it is my secret.’

Yet, although secrecy was imperative for some women, in many relationships disclosure of the diaphragm was desired and/or inevitable. Disclosure was often exceptionally problematic.

Women who informed their partners that they intended to use the diaphragm once they had enrolled in the study often experienced resistance from their partners. Aisha, a married woman aged 40 years, decided to opt out of the study due to her husband’s reaction:

‘I tried the diaphragm but my husband became very harsh with me so I decided that there is no need to destroy my family so I left it. At the moment I don’t use any family planning methods, I just depend on God.’

Mwanaisha, a 37-year-old woman, explained that her husband initially agreed but later refused to allow her to use the diaphragm:

‘When I first told my husband about the diaphragm he agreed and said that if it is a method of family planning, then there was no problem. But when he saw it he said “what kind of thing is this? Don’t ever use it”. So I kept it till now. He said that it was a female condom and I could not wear it. He felt that if I start wearing the diaphragm then I could get out of the house and see other men.’

In contrast, those women who were in relationships in which reproductive and sexual health issues were discussed relatively openly, disclosure was not a critical issue. Lillian, a 37-year-old married woman, initiated a discussion about the diaphragm with her husband before she started to use it:

‘I have taken pills [oral contraception] for a long time. I am now tired since I gave birth to my last child born in 1991. When I came to know about the diaphragm, I did not hide from my partner, I told him ‘look at this thing, it is used like this and now I am tired of using these pills for all those years, let us try and see if it will work’. So we tried the first month, that was December, it was okay, January, it was okay, February, it was okay, March, it was okay until now. To tell the truth I don’t use any other method besides the diaphragm. I told him this, I want to stop using the oral contraceptives, I want to use this thing and see if it will suit me for family planning. If it suits me, I will stop the oral contraceptive pills. So I continued using it until now. He is grateful because he was the one who was buying the pills.’
Although Lillian’s case was not the norm, several women eventually disclosed to their partners after having used the diaphragm in secret for some time. Katama, a 38-year-old man recalled:

“When my wife came with it for the first time she could not find a way of telling me, so she decided to use it secretly. After using it secretly, she tried seducing me in every way to get me to agree to use the diaphragm. It took me a long time before I agreed to it.”

However, in several cases accidental discovery pre-empted disclosure. For example, as mentioned earlier, some men were able to feel the diaphragm, especially when having sex from behind. Maintaining secrecy of the diaphragm in the long run was difficult, particularly with co-residential partners where accidental discovery of the diaphragm could occur. This sometimes had negative consequences and could result in partner conflict. However, all the reported incidents of violence following accidental discovery of the diaphragm occurred within relationships that had long-standing high levels of conflict, often including physical violence. Below are three excerpts from in-depth interviews detailing women’s experiences after accidental discovery. Christine, a 29-year-old married woman, recalled what happened when her husband discovered her diaphragm:

“One day as my husband was looking for his clothes in the wardrobe he came across the diaphragm. He asked me what it was used for. I explained to him that it is a diaphragm for protection against sexually transmitted infections and contraception. He was furious. He said ‘Oh, so you think I am promiscuous’. He then shouted and argued with me, eventually we had a fight.”

In other cases, men responded more violently. Mary, a 37-year-old resident of Chaani, had been married for five years with two children. She used the diaphragm for several months until the device was discovered by her husband. According to Mary, he said:

“So you have other men and they are so many that you have to use this thing [diaphragm] with them.”

He then reported Mary’s actions to his mother who accused Mary of being a prostitute. Infuriated, Mary separated from her husband. Although the discovery of the diaphragm seemed to be the main reason for their break up, it appears that it only precipitated the end of an unhappy relationship. Mary reported that her husband was ‘a drunkard and was ready to beat me up’. Adhiambo (33 years old) had a similar experience. When her husband discovered that she had been using the diaphragm for several months he beat her severely.
In these situations the diaphragm itself sometimes became the main object of the dispute. Liz was 30 years old and had two children. She recounted in an in-depth interview that her husband was aware that she was using the diaphragm and had initially supported her using it as she had experienced adverse side-effects with hormonal contraception. Yet when their youngest child decided that they should have another baby, Liz’s husband decided that they should have another baby. Liz refused and continued to use the diaphragm:

“When we quarrelled he burnt the diaphragm and we continued having unprotected sex because telling him to wear a condom would have made him ask me if I am his prostitute. He burnt the diaphragm intentionally so that I could conceive, because he said that before the end of the year he wanted me to have another baby…and now that I am pregnant he is satisfied. Maybe I can use it later.”

Discussion

Experiences with new female-controlled methods for preventing HIV continue to reflect the barriers women face in carrying out safer behaviour choices such as condom use and postponing or limiting the number of pregnancies. These difficulties are particularly pronounced in situations where men strive to exert control over decisions about fertility, sexual pleasure and HIV prevention. New prevention methods like microbicides and cervical barriers are intended to be invisible and, by extension, clandestine and therefore empowering for the women who use them. In the context of an HIV epidemic where younger women bear the burden of HIV, female-controlled methods may be a crucial part of strategies to reduce infections (Minnis and Padian 2005). They would provide those women who have no means of combating a possibly deadly infection with a form of protection that is hidden, thereby allowing them to take increased control.

The data presented in this paper underline the importance of the clandestine use of the diaphragm, especially in relationships in which sexual negotiations are limited (sex workers and women who experience intimate-partner violence) or where partners differ over decisions about fertility. With casual partners or paying clients, women did not feel it necessary to disclose diaphragm use. However, as in a Ugandan study (Green et al. 2001), we showed that clandestine use was not always desirable or feasible; in many situations women willingly disclosed to their partners. In particular, married women or those in a long-term relationship often wished to disclose. Their dilemma was how to introduce the diaphragm to their partners. The type and nature of the relationship appears to be a major influence on the desire to disclose diaphragm
use, but also on the complexity of the disclosure process. As with disclosing HIV status to partners, disclosure of diaphragm use was often a process rather than a single event. Among partners who communicate openly about sexual health, couple counselling could potentially be a useful means of introducing the diaphragm. For some couples, this may obviate the need for complex disclosure processes and assist in delivery of accurate information for men. Further investigation of strategies to facilitate beneficial disclosure may also be important for microbicide products as it is possible that similar issues emerge with use of microbicides.

Accidental or belated disclosure of diaphragm use can have important negative implications within married or long-term relationships. Though secretive methods negate the need for discussion, this can create distrust and result in negative consequences for women when discovered. The same social context that necessitates the need for women to use covert methods of protection may also precipitate adverse consequences upon discovery of undisclosed use of the diaphragm, microbicides or related technologies.

The meanings of diaphragm use were also very different depending on the type of relationship, for example paid sexual encounters and long term partnerships. Diaphragm use in stable partnerships symbolised distrust and infidelity, similar to reactions to female and male condoms. Within regular partnerships, method use may depend on the dyadic relationship, with couple-decision making generally taking precedence over the individual's attitude to the product. Evidence from this paper suggests that, as with male condoms, women in casual and commercial sex relationships, rather than those in marital or regular relationship found it easier to use the diaphragm.

As expected (Severy and Newcomer 2005), women reported making tradeoffs between the diaphragm and available contraceptive and HIV-preventive methods. Though women viewed the diaphragm as an additional protective option in circumstances where condoms were unfeasible, it appears that it also replaced condom use in some couples. However, as the proportion of women using condoms remained unchanged throughout the study, it is possible that the decrease in condom use among some couples may have been counterbalanced by increased use in other women due to condom-promotion activities. Similarly, women reported substituting more effective contraceptive methods with the diaphragm. This migration occurred despite repeated counselling about its relatively high contraceptive failure rate and the unknown protective efficacy of the diaphragm against STIs. It is intended that new technologies will address unmet needs rather than replace existing methods. Re-introducing the diaphragm in Kenya would broaden the current
contraceptive method mix and may increase the overall contraceptive prevalence. However, it is possible that the presence of an alternative to condoms may undermine the incentive for women to undertake difficult condom negotiations. Moreover, the lack of condom migration seen thus far in clinical studies (Foss et al. 2003; Behets et al. 2005; van der Straten et al. 2005) may not be mirrored in real-life situations, where women have a range of methods to choose from and health providers have marked impact on method selection.

On the other hand, a shared interest between men and women is sexual pleasure. As commonly described (Hart et al. 1999; Pool et al. 2000; Thomsen et al. 2004), men and women concur that condoms are undesirable and hinder sexual pleasure. In this study the diaphragm was regarded as a way of increasing sexual intimacy and liberating sexuality from the constraints of condoms. The extent to which protective methods intrude into sexual pleasure and spontaneity is a key factor in determining whether they will be used consistently and correctly, especially in the ‘heat of the moment’ (Severy and Newcomer 2005). As previously shown (Albarracin et al. 2000), methods that are highly coital dependent are more likely to be used inconsistently. Compared with the condom, diaphragm insertion is relatively coitus independent. Increases in the recommended time that the diaphragm can remain in situ may accentuate this aspect. Recently developed cervical barriers can be worn up to 72 hours, allowing for near continuous diaphragm use. This may also address some difficulties with the timing of its insertion and removal. However for some women, the option of removing the diaphragm sooner than the recommended six hours after coitus may improve diaphragm acceptability. This issue was also described in a similar study in Kenya (Sharma et al. 2006) and warrants investigation.

Several factors limit the ability to draw conclusions from this study and to generalize its findings. Different themes may have emerged had selection of focus group participants been based on probability sampling, rather than the subjective views of study staff. Further, data on men’s perceptions is limited as few men participated and their views may not be generalizable to other men. Men who had negative experiences with the diaphragm may have chosen not to participate, potentially resulting in an under-representation of negative experiences in men. Levels of male participation in this study illustrate the difficulties faced with increasing men’s involvement in reproductive health services and the low acceptability of such service for men. Nevertheless, including men’s perspectives provided valuable information and is important for predicting sustained use of the diaphragm (Thomson and Hoem 1998).
As we intentionally selected women who had discontinued diaphragm use and those who experienced violence, study results may over-represent negative experiences of women. This is evidenced by the fact that about half of women used the diaphragm for six months without disclosing its use to their partners. However these data, even from women who experienced violence, may be useful in understanding the more typical experiences of women in this setting. Though theoretical saturation was reached for the main themes covered in this paper, having only five focus groups limited the ability to explore further sub-themes.

The users’ perspectives presented here add information about the actual behaviours of women and men and the impediments to diaphragm use. Findings also caution that differential continuation rates may be observed in the long run, depending on relationship type or gender-power distribution. The value of such findings again illustrates the difficulties with predicting sustained use of a new product on the basis of only continuation rates (Reproductive Health Matters for the World Health Organisation 1997). Analysis of the experiences of women and men provide a more vivid picture of the comfort and difficulties with the diaphragm, issues not captured by continuation rates, particularly those in a study setting. If trials confirm protective efficacy of the diaphragm, issues described here should be taken into account during diaphragm promotion. Promotion strategies may need to specifically address particular groups of women and types of relationships. Moreover, realistic assessment is needed of the extent to which a woman's control over diaphragm insertion is able to counter gender-power imbalances within long-term relationships.

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Article 3

4.3 Contraceptive needs of female sex workers in Kenya – A cross-sectional study

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Contraceptive needs of female sex workers in Kenya – A cross-sectional study

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ABSTRACT

Background and objectives: Female sex workers (FSWs) are thought to be at heightened risk for unintended pregnancy, although sexual and reproductive health interventions reaching these populations are typically focused on the increased risk of sexually transmitted infections. The objective of this study of FSWs in Kenya is to document patterns of contraceptive use and unmet need for contraception.

Methods: This research surveys a large sample of female sex workers (n=597) and also uses qualitative data from focus group discussions.

Results: The reported level of modern contraceptives in our setting was very high. However, like other studies, we found a high reliance on male condoms, coupled with inconsistent use at last sex, which resulted in a higher potential for unmet need for contraception than the high levels of modern contraceptives might suggest. Dual method use was also frequently encountered in this population and the benefits of this practice were clearly outlined by focus group participants.

Conclusion: These findings suggest that the promotion of dual methods among this population could help meet the broader reproductive health needs of FSWs. Furthermore, this research underscores the necessity of considering consistency of condom use when estimating the unmet or undermet contraceptive needs of this population.
INTRODUCTION

Female sex workers (FSWs) are often targeted by public health interventions designed to prevent sexually transmitted infections (STIs), including infection with the human immunodeficiency virus (HIV). However, such targeted programmes sometimes overlook the broader reproductive health needs of these women. As a result, inadequate attention has been paid to the issue of unintended pregnancy, another heightened reproductive health risk among sex workers.

Few studies have reported on pregnancy desires and contraceptive use among FSWs. The limited amount of existing research has shown high incidences of unintended pregnancy and a low contraceptive prevalence in this particular group. All studies report that sex workers who do use contraception resort most often to condoms yet the latter are not consistently used in all sex acts. FSWs may have difficulties in negotiating the consistent use of condoms with clients, and also may deliberately use condoms with some types of partners (such as casual clients) while deliberately not using condoms with other types of partners (such as emotional partners or regular clients).

The consistency of condom use is a critical consideration when evaluating its role in reducing unmet need for contraception, not to mention HIV/STI prevention. With ‘typical’ use, condoms have only a 79-85% effectiveness rate at preventing pregnancy, which is lower than the typical use effectiveness of many other modern methods. As commonly measured and reported, unmet need for contraception does not take into account the correct and consistent use of a method, only whether method use is reported. However, accurately documenting and addressing FSWs’ contraceptive needs is essential given their many and varied reproductive health risks, including unintended pregnancy and mother-to-child HIV transmission.

We investigated patterns of recent self-reported contraceptive use and unmet contraceptive needs among FSWs in two urban areas of Kenya. This study also assesses the impact of inconsistent condom use on the measurement of unmet need for contraception and describes the experience with dual method use (the use of multiple contraceptive methods simultaneously) among FSWs who are served by active condom promotion programmes.
METHODS

The research took place from June to December, 2008, within the Naivasha and Changamwe districts of Kenya’s Rift Valley and Coast Provinces, respectively. These urban to semi-urban districts are known for having a concentrated FSW population, partly due to the port and tourist trade in Changamwe, and to truck drivers and seasonal workers in flower farms in Naivasha. FSW communities in both districts are being actively served by long-running and well established HIV and STI prevention programmes. These programmes are administered by two different organisations but are similar in nature, having an emphasis on condom promotion and peer education. The programme in Changamwe is administered by the International Centre for Reproductive Health, Kenya (ICRH-K) and that in Naivasha by Lifebloom Services International (LBSI). In both interventions, peer educators actively promote HIV testing and counselling, and condom use.

We utilised a mixed-method cross-sectional study design consisting of survey interviews and semi-structured focus group discussions (FGDs) with FSWs aged 16 to 45 years. A FSW is defined as any sexually active woman who reported receiving money or goods in exchange for sex within the last six months as a part of her livelihood. Beside socio-demographic information, the individual interviews assessed FSWs’ fertility desires, unmet need for contraception, and knowledge, attitudes, and experiences relating to the use of family planning (FP) methods in the past 30 days. Focus group discussions were conducted to explore normative perceptions and behaviours/practices surrounding FP as well as to investigate sex workers’ outlook on FP methods and services.

A targeted snowball sample of 597 individuals were interviewed across the two research sites (n=300 in Changamwe and n=297 in Naivasha). The FGDs involved four groups, each consisting of 8-12 participants, resulting in a total of eight discussions and eight transcripts. Written informed consent was privately obtained from both interviewees and focus group participants.

Peer educators spread the word that a team of interviewers could be found at a secure site and that they were keen on speaking with FSWs. Interested women approached the interview team. Those who met the study inclusion criteria (FSW aged 16-45 years) were invited to participate at random in either the survey or a FGD, with every other eligible participant asked to take part in a FGD until the FGD discussions were full or complete. Participation in one type of interview precluded participation in the other. All interviews and FGDs took place at a neutral, confidential location secured by the research team in the study sites. All interviews were conducted in the
national language, Swahili, by trained interviewers. Similarly, a trained duo of a focus group moderator and a note taker conducted all FGDs. The same focus group research pair conducted all focus groups in both study sites to enhance consistency, and FGDs were not held concurrently in space and time with individual interviews.

Cash compensation at a standard flat rate of Ksh 300 (approximately USD $4.29/• 2.90 at the time of data collection) was provided to all study participants upon arrival at the interview location and in exchange for their participation voucher. This compensation was provided to compensate for participants’ transportation costs to the interview site, and was approved by two institutional review boards, including Family Health International’s Protection of Human Rights Committee and the Kenyatta National Hospital Ethical Review Committee.

At the close of the interview or focus group, all participants received information on readily available service delivery points for FP and HIV Counselling and Testing services.

**Data management and analysis**

All interview data were double entered into EpiData v. 3.1 (EpiData Association) by trained data entry specialists. Data were then cleaned and queried using Stata v. 9.0 (StataCorps). Descriptive data analyses were conducted and were verified by an independent analyst before being considered final. Data analysis is restricted to descriptive statistics only, and no probability-based inferential statistics (such as comparison testing or regression analysis) were calculated.

Survey respondents were considered to have an immediate unmet need for contraception if they were not currently pregnant, not currently using a modern FP method, and did not desire a pregnancy within the next two years. As the survey did not assess the exclusivity and duration of breastfeeding, breastfeeding status was not included as a component of unmet need. In the revised estimate of unmet need, we also included women who were currently relying on condoms alone but used them inconsistently. Inconsistent condom-only users were those who were using only the male or female condom but reported not using a condom at last sex with either a client or an emotional (non-paying) partner. While the Demographic and Health Surveys (DHS) consider currently pregnant women as having an unmet need for contraception if the pregnancy was unplanned\textsuperscript{12}, for the purposes of this analysis we restricted the analysis to those women with an immediate need for contraception, excluding pregnant women who are not in a position to immediately adopt a contraceptive method.
FGDs were digitally recorded, uploaded to a laptop computer, transcribed verbatim, and translated from Swahili to English by the moderator and note taker. Transcriptions and translations were reviewed for quality by the interview team. The analysis team performed qualitative analyses with NVivo v. 7.0 (QSR International Pty Ltd) qualitative data analysis software. A content-driven theme approach was used for analytic review of the FGD data. Transcripts were read and re-read to identify recurrent themes and to develop a coding tree. Once all the transcripts were coded, memos and display matrices were developed to examine each code in detail for sub-themes, nuances, and patterns across the interviews.

**RESULTS**

**Demographic characteristics and reproductive history**

The average survey respondent was in her late 20s, with at least one living child, and did not currently live with a partner with whom she was emotionally involved, although about half the women reported having such a partner (Table 1). Less detailed background information was collected from FGD participants, although the latter did not significantly differ from survey respondents by age or parity (data not shown), and were recruited at the same time and in the same manner as those.
| Table 1. Demographic and sex work characteristics of survey interview participants |
|----------------------------------|-----------------|-----------------|-----------------|
|                                  | Mean (SD) or %   | Naivasha (n=297) | Changamwe (n=300) |
| Demographic characteristics     |                 |                 |                 |
| Age                              | 27.4 6.9        | 27.3 6.6        | 27.6 7.3        |
| Years of education              | 8.7 3.0         | 8.5 2.5         | 8.8 3.4         |
| Has living children             | 82.9 --         | 80.5 --         | 85.3 --         |
| Number of living children       | 1.8 1.3         | 1.9 1.4         | 1.8 1.3         |
| Has a current emotional partner | 53 --           | 62 --           | 44 --           |
| Currently lives with a partner  | 4 --            | 5 --            | 2 --            |
| HIV-positive (self-disclosed)   | 9 --            | 8 --            | 11 --           |
| Sex work characteristics        |                 |                 |                 |
| Age of sex work initiation      | 20.3 5.2        | 20.0 4.0        | 20.7 6.0        |
| Has income other than sex work  | 34 --           | 46 --           | 22 --           |
| Average income from sex work in | 2244 4817       | 1351 889        | 3124 6620       |
| the last 7 days (in KSH)*       |                 |                 |                 |
| Number of clients in last 7     | 7.3 5.7         | 5.3 3.5         | 9.3 6.7         |
| days                               |                 |                 |                 |
| Recruits clients mostly in bars/| 71 --           | 78 --           | 64 --           |
| discos                           |                 |                 |                 |
| Recruits clients mostly in brothels | 7 --          | 4 --            | 9 --            |
| Recruits clients mostly in brew dens | 5 --          | 0 --            | 9 --            |

* 70 KSH=1 USD=0.68 • at the time of data collection
SD: standard deviation

Nine % of FSWs (N=597) stated they were infected with HIV. The average age of sex work initiation in both sites was 20 years and a minority of FSWs reported having a source of income other than sex work. The overwhelming majority of sex workers in both Naivasha and Changamwe stated they primarily relied on bars (78% in Naivasha and 64% in Changamwe) as an ‘easy place to meet clients’. However, 9% of sex workers in Changamwe reported being primarily brothel-
based, and another 9% primarily meeting their clients in illegal brew dens. In Naivasha, only 4% of respondents mentioned being brothel-based, and none allegedly met clients in brew dens. The remaining sex workers in both sites reported a combination of primary client recruitment locations including the street (5%), home (5%), and other places (including the beach, petrol stations, workplaces, etc.). Changamwe sex workers recalled both a greater number of clients (9.3 vs. 5.3) and a higher weekly income (3124 KSH vs. 1351 KSH per week) from sex work than their counterparts in Naivasha, though the standard deviations are large. The range of the number of partners reported in Naivasha was zero to 21, with a median of five, and in Changamwe was zero to 47, with a median value of eight.

FSWs from both study sites frequently recounted histories including unintended pregnancies and induced abortion (Table 2). Almost half of all respondents described having had at least one unintended pregnancy in the past, and more than a third of respondents told of having had an induced abortion (an illegal and often unsafe procedure) at some point in the past.

Table 2. Past experience with unintended pregnancy and induced abortion and current fertility desires of survey interview participants, by study site

<table>
<thead>
<tr>
<th></th>
<th>Overall (N=597)</th>
<th>Naivasha (n=297)</th>
<th>Changamwe (n=300)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever been pregnant</td>
<td>88</td>
<td>85</td>
<td>92</td>
</tr>
<tr>
<td>Ever had an unintended pregnancy</td>
<td>52</td>
<td>46</td>
<td>59</td>
</tr>
<tr>
<td>Ever had an induced abortion</td>
<td>37</td>
<td>32</td>
<td>43</td>
</tr>
<tr>
<td>Current fertility desires</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not pregnant, wants no more children ever</td>
<td>60</td>
<td>54</td>
<td>64</td>
</tr>
<tr>
<td>Not pregnant, wants no more children within two years</td>
<td>16</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>Not pregnant, wants more children within two years</td>
<td>20</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Currently pregnant</td>
<td>4</td>
<td>7</td>
<td>2</td>
</tr>
</tbody>
</table>

Qualitative data further highlight the realities associated with unintended pregnancy among FSWs. Informants reported that unintended pregnancies were a common occurrence among FSWs, with distressing economic and personal consequences, including loss of work and clients, potential for domestic violence from a boyfriend or partner displeased with the pregnancy, and the burden posed by the financial expense of raising another child. As one FGD participant described: ‘It is important for her [a sex worker] to prevent pregnancy because her life as it is right now is stressful. She does not have anyone to depend on except herself, there is no one to help with
taking care of her children, she has to lock her house at night when she is out there soliciting and if she is doing it not far away, she will have to keep on running back and forth just to check how her children are doing. It will be difficult if she [gets] pregnant.

Also, informants openly discussed the practice of induced abortion as an option to be considered when faced with an unintended pregnancy. For example, one FGD informant said, when asked what a FSW would do when faced with an unintended pregnancy, that: ‘What will happen is that [she] will just remove the pregnancy. She will just remove it. She already has another child and now she is pregnant, landlord comes calling, this child is crying of hunger and maybe she has the kind of pregnancy which causes a lot of stress...it is better to remove it and continue with life.’ Other FSWs reported being pressured to procure an abortion by partners as this FGD respondent described: ‘... another [partner] will give you money and tell you to remove it and, if not, will harass you until you comply.’ Many FSWs described weighing the difficulties of an unintended pregnancy against possible abortion complications as another FGD respondent explained: ‘... you have seen the need to keep the baby and not have an abortion which may be risky not just to your health but your life too.’

**Contraceptive use**

Overall, 16 \% of survey participants reported wishing to wait at least two years before having more children, and 60\% of the women expressed a desire to have no pregnancies at any time in the future (Table 2). Furthermore, the current use of modern contraceptives was common (93\%), with 54\% reporting the use of a modern method other than condoms, usually injectables or pills (Table 3). While 39\% of all respondents recounted using a male or female condom by itself, 38\% of the total sample described using a male condom together with another modern method. This second method was usually an injectable but could also be the pill.
Table 3. Contraceptive practices among survey respondents, by study site.

<table>
<thead>
<tr>
<th>Reported current contraceptive use</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall N=597</td>
</tr>
<tr>
<td>No method</td>
<td>7</td>
</tr>
<tr>
<td>Condoms and another modern method</td>
<td>38</td>
</tr>
<tr>
<td>Condoms only</td>
<td>39</td>
</tr>
<tr>
<td>Modern method other than condoms, only</td>
<td>16</td>
</tr>
</tbody>
</table>

| Method mix*                                          |                |
| Male condom                                          | 75             | 68             | 83             |
| Female condom                                        | 6              | <1%            | 12             |
| Injectables                                          | 39             | 46             | 32             |
| Pills                                                | 11             | 10             | 11             |
| Implants                                             | 2              | 2              | <1%            |
| Other modern method                                  | 2              | 2              | 3              |

| Condom use consistency                               |                |
| Used a condom at last sex with a partner with whom she was emotionally involved | 41 | 40 | 42 |
| Used a condom at last sex with a paying client       | 90             | 98             | 82             |
| Negotiating condom use with clients is “difficult” or “impossible” | 46 | 39 | 52 |

*Method mix sums to greater than 100% because respondents could report more than one method.

Respondents recognised the dual protection benefits of the condom for disease and pregnancy prevention. As a focus group informant explained: I also think [a FSW] should... use a condom. Here she will have two things; one she will have protection against infection from her clients and two do family planning. She must use a condom to protect herself from infections and at the same time not add more children to the ones she already has. Other respondents were able to clearly articulate the benefits of dual method use, rather than relying on condoms alone. For example, as this focus group respondent said: She [a FSW] will use condoms mostly to prevent STIs, but she is already using another method to prevent pregnancy. This appreciation among sex workers for the benefits of dual protection via condom use and dual method use is reflected in the high rates of condom use and dual method use observed in this population.

Many focus group participants and survey respondents report that they used or would like to use methods that were effective but did not require daily intervention, such as injectable contraception or an implant. It was often mentioned that sex work circumstances interfere with the correct and consistent use of other methods. Focus group informants described getting drunk or staying out with a partner or client for several days which prevented or would prevent them from adhering to the daily regimens of the pill, and/or correctly and consistently using the condom. For example, an informant discussed difficulty adhering to the pill when: ‘You go out there to drink alcohol and end up drunk. You will oversleep and cannot even remember to go home. If that happens, then it is not always possible to remember taking the pill which you have
to **swallow every day.**’ And another informant explained: ‘*Let’s say you are supposed to take it every evening or morning, you get a client who keeps you all week long, you did not take them with you, you simply forget.*’ Another FGD respondent expressed the benefit of injectable contraception over a condom for sex workers who cannot negotiate condom use, saying: ‘Yes, she is ready to use [injectable contraception] because maybe a client would not want to use a condom during sex.... At the time, [a FSW] would have an assurance that at least the injection received earlier on has saved the day.’

As described above, many FGD participants mentioned that condoms and pills could be easily forgotten. Many respondents also noted that condoms could tear during intercourse. For example, one respondent described the situation of a FSW who found herself pregnant ‘because she has very many and different clients, maybe she has been with this one client today and the condom burst, the previous day she may have not used a condom at all.’ However, both these methods were frequently mentioned by FGD respondents as ‘the most convenient for sex workers’ because they are readily available. As one FGD respondent explained about forgetting her pack of pills, ‘*...we are in town and there are many chemists around, all I’ll do is rush to one and buy a new pack.*’ In addition to convenience, condoms, as discussed above, were valued for their dual protection attributes. Also, the ability to take pills as emergency contraception (EC) or to buy pre-packaged EC pills was also highlighted as a benefit by many respondents.

Few FGD informants would like to use the intrauterine device (IUD) because many mistakenly perceived it as being ‘dangerous’ for sex workers. It was commonly believed that the IUD could be displaced through rough sex and cause problems as is highlighted by the following excerpt from a conversation between three focus group respondents: R8: ‘[One contraceptive method available is the] coil [IUD], but you could use it with someone who is rough and hurts you.’ R6: ‘Or his penis is big and displaces the coil inside you.’ R7: ‘Maybe the man is drunk or high on bhang and he pushes the coil so hard inside her that he disfigures it.’ Also, a few informants were concerned that clients could feel the strings of the IUD and react negatively. For example, one respondent said:

‘She [a sex worker] does not want to use the coil because who [a client] may feel it during sex and wonder what it could be.’
**Unmet need for contraception and condom use consistency**

Unmet need for contraception, was very low (3.8%) among survey respondents. A closer analysis reveals that this extremely low level of unmet need arises from the high levels of self-reported contraceptive use, in particular the use of male condoms. However, the consistency of condom use in this population is called into question given the relatively low reported rates of condom use at last sex with emotional partners (41%) as opposed to clients (90%) (Table 3) and the sizeable proportion of survey respondents (46%) who reported condom use negotiation with clients to be ‘difficult’ or ‘impossible’.

Qualitative data supported survey findings on inconsistency of condom use. FGD informants detailed many difficulties sex workers faced in negotiating condom use and/or using condoms correctly and consistently. Difficulties described included FSWs foregoing condom use with clients for higher payment of sex, fear of sexual violence or force, forgetting to use condoms because of substance use, and not being able to negotiate condom use with emotional partners for issues related to trust. For example, one respondent explained: ‘one may get a client or clients but they do not want to use protection [a condom], and they force you.’

The calculation of unmet need was revised (as described in the methods section above) to include those women who were not currently pregnant, who did not wish to have a child in the next two years, who reported using condoms as their only contraceptive method in the last 30 days, and who also stated they had not used a condom at last sex with either a partner with whom they were emotionally involved or a client. This recalculation gives a potential unmet need of 13.6% among the FSWs surveyed almost four times the unmet need when not accounting for condom use consistency.

**DISCUSSION**

This study contributes to the literature both conducting a primary survey of a large sample of FSWs and by supporting and nuancing quantitative results with the qualitative findings from focus group discussions. This work builds on earlier, mostly secondary, analyses of the contraceptive needs of FSWs. The only other mixed-method, primary study of the unmet needs of FSWs of which the authors are aware was conducted in Southeast Asia. Additionally, working in study areas with active STI prevention and peer-educator interventions provided this study with two additional advantages. First, the ongoing STI prevention efforts of ICRH-K and LBSI have built trust...
and credibility in the FSW community which led to closer participation and faster recruitment. Second, our estimate of unmet need for contraception in this population demonstrates the degree of need which remains despite heavy condom promotion and active HIV/STI prevention messaging.

The many sexual partners on a weekly basis reported by survey respondents in this study highlight the vulnerability of FSWs to both unintended pregnancy and STIs, including HIV. In our sample of FSWs, most respondents had children already, and there was a high desire to delay and limit births. Furthermore, our study population practised contraception on a wide scale. Unlike previous studies which showed high unmet needs for contraception in sex worker populations, the estimated unmet need for contraception in the FSWs we sampled, based on any reported use of a modern method, was low (<5%). A revised calculation of unmet need which includes inconsistent (no condom use at last sex) condom users resulted in a greater (almost quadrupled) level of unmet need in this population. This revised estimate may not be entirely exact and hence may neither precisely reflect actual behaviour nor correct for potential response biases (a difficulty inherent in sexual behaviour research\textsuperscript{13,15}). Yet, it does reflect the importance of considering the correct and consistent use of condoms when describing the contraceptive needs of this population. In fact, this revised estimate of unmet need may still underestimate the actual unmet need if the FSWs surveyed overstated condom use in the last 30 days, and/or overstated condom use at last sex, or if condom use at last sex is not ‘typical’ for the population sampled. Overstatement of condom use at last sex seems particularly likely in this study, given the apparent conflict that exists between the women's reports of nearly universal condom usage with clients, and their frequent description of condom use with clients as being ‘difficult’ or ‘impossible’. The reported high levels of condom use are perhaps unsurprising in our two study sites, which are actively targeted by current and ongoing STI prevention programmes. The study area FSWs may indeed show higher than average levels of condom use compared to similar women in other parts of Sub-Saharan Africa or their heightened exposure to condom messages may promote a social desirability bias.

To prevent unintended pregnancies in this group, there remains a great need for promoting alternative and potentially more effective contraceptive methods, particularly non-daily use or non-coitally dependent methods such as injectables and implants, in addition to condoms. The promotion of dual method use would lessen the risk of unintended pregnancy in the many situations when FSWs cannot correctly and consistently use condoms at every sex act or take
pills every day. Most respondents in our study wished to limit childbearing by avoiding any future pregnancy. However, contraceptives used consisted mainly of condoms and pills. Although focus group participants were able to articulate some advantages of condoms and pills, the desirability of longer acting methods, especially combined with condoms as part of a dual method strategy to prevent both pregnancy and disease, was often mentioned, as well. This suggests there may be some ‘unmet’ need for long-acting and permanent methods and dual method use among this group.

Promoting dual method use to a population at high risk of unintended pregnancy and STIs (including HIV) may raise fears that, once using another contraceptive method, FSWs will be less inclined to use also a condom\textsuperscript{16}. However, in this study, focus group participants repeatedly mentioned the advantages of dual protection over condoms only. Survey results also indicated a sizeable proportion of women who reported dual method use in the last 30 days. Further, the survey indicated that some women who desired a pregnancy were still using condoms and many women were actively separating their use of condoms for HIV/STI prevention and for pregnancy prevention. It seems likely this separation could be resulting from the successful promotion of condoms for disease prevention by active STI prevention activities ongoing in the study area. This formative information suggests that a dual methods message could be appreciated and well-received by the FSWs whom we interviewed.

The finding that many FSWs are using contraception but remain in need due to incorrect and inconsistent use of contraceptives (especially condoms but also pills) highlights the need to define a more accurate way of measuring unmet need for contraception in this population. In this study unmet need was first measured in the usual way, excluding women who reported having used a modern contraceptive in the last 30 days. However, considering contraceptive users as having a ‘met contraceptive need’ becomes unrealistic when considering FSWs who may be using condoms or other methods with certain partners but not others, who have a large number of partners, and who may be experiencing difficulties in using their method correctly and consistently. This complexity underscores the reality that the reproductive health needs of FSWs are diverse and interconnected, and that efforts to address STIs, HIV, and unintended pregnancy should be made within an integrated reproductive health framework.

Broader interpretations of the findings of this study must be made with caution. Given that sex work is illegal in Kenya and highly stigmatised, we were unable to randomly sample this hard-to-reach population. Therefore, inferences can only be drawn for study participants and cannot be
generalized to the larger population of FSWs in Kenya. Further, like all sexual behaviour surveys this study is subject to response biases, including a potential underestimate of the proportion of the participants who were HIV positive, a possible overestimate of condom use and condom use at last sex, and a probable underestimate of unintended pregnancies and induced abortions experienced in the past. In fact, the incidence of HIV reported in this study is markedly lower than that in studies among FSWs in Kenya recently carried out by Luchters et al. and Vandenhoudt et al. (unpublished [1], 2010), while rates of condom use are similar to those found in other studies of Kenyan FSWs (Vandenhoudt et al. unpublished [2], 2010). It is also possible that women lied about exchanging money for sex in order to obtain the compensation offered. However, efforts to limit this was made by asking for referrals from peer educators, using open ended screening questions to determine study eligibility, the self-identification (and self-presentation at a pre-selected interview site with no guarantee of eligibility), and the selection of a compensation amount that was in line with similar studies. Even with these limitations, however, our findings of high contraceptive use, low condom use consistency, and high effective levels of unmet need for contraception which could be ameliorated by dual method use have implications for the likely contraceptive needs of this stigmatised and vulnerable population.
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4.4 Social context, sexual risk perceptions and stigma: HIV vulnerability among male sex workers in Mombasa, Kenya

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Social context, sexual risk perceptions and stigma: HIV vulnerability among male sex workers in Mombasa, Kenya

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Abstract

Knowledge about sexual practices and life experiences of men having sex with men in Kenya, and indeed in East Africa, is limited. Although the impact of male same-sex HIV transmission in Africa is increasingly acknowledged, HIV prevention initiatives remain focused largely on heterosexual and mother-to-child transmission. Using data from ten in-depth interviews and three focus group discussions (36 men), this analysis explores social and behavioural determinants of sexual risks among men who sell sex to men in Mombasa, Kenya. Analysis showed a range and variation of men by age and social class. First male same-sex experiences occurred for diverse reasons, including love and pleasure, as part of sexual exploration, economic exchange and coercion. Condom use is erratic and subject to common constraints, including notions of sexual interference and motivations of clients. Low knowledge compounds sexual risk taking, with a widespread belief that the risk of HIV transmission through anal sex is lower than vaginal sex. Traditional family values, stereotypes of abnormality, gender norms and cultural and religious influences underlie intense stigma and discrimination. This information is guiding development of peer education programmes and sensitisation of health providers, addressing unmet HIV prevention needs. Such changes are required throughout Eastern Africa.

Keywords: Kenya; male sex work; men who have sex with men; HIV/AIDS; HIV prevention
Introduction

Sex between men occurs throughout cultures and societies, although its recognition and public visibility vary markedly (Murray and Roscoe 1998). In many parts of Africa, there is evidence showing that same-sex relationships have been an unspoken part of these societies for many years (Evans-Pritchard 1929; Werner 1987; Kiama 1999; Niang et al. 2003; Allman et al. 2007). Within the African context, male-male sexuality is, however, popularly associated with European or Western influence (McKenna 1996; Murray and Roscoe 1998; Niang et al. 2003) and there is widespread denial that it has roots in traditional African society. Sex between men is thought to account for between 5 and 10% of HIV infections globally (UNAIDS 2006) and was estimated to contribute 5% of new HIV infections in Kenya in 2005 (Gouws et al. 2006).

In Kenya and Senegal, where overall HIV prevalence is 7 and 1%, respectively (UNAIDS 2008), HIV prevalence among men having sex with men has been estimated at 38 and 22%, respectively (Wade, Kane, and Diallo 2005; Sanders et al. 2007). Such levels of infection are attributed to a combination of biological, behavioural and socio-cultural factors, which together create considerable risk for acquiring and transmitting HIV (Allman et al. 2007; Geibel et al. 2008; UNAIDS 2008). Several, mainly Western, studies reveal high biological vulnerability to HIV; this due mainly to highly efficient transmission via unprotected anal sex and extensive sexual partner networks (Roehr, Gross, and Mayer 2001; Shallock and Moore 2003).

Limited available evidence suggests that sex between men in African settings is commonly unprotected and partner numbers are high (Niang et al. 2003; Onyango-Ouma, Birungi, and Geibel 2005; Lane et al. 2006; Sanders et al. 2007). These studies also showed that men who have sex with men in this setting also frequently have sex with women (Niang et al. 2003; Geibel et al. 2008).

The law in Kenya criminalises same-sex sexual activity (Government of Kenya 2008), making it difficult for HIV prevention programmes to fully address male sex work. Section 162 of the Penal Code states that ‘any person who has carnal knowledge of any person against the order of nature; or... permits a male person to have carnal knowledge of him ‘... is guilty of a felony and is liable to imprisonment of 14 years’. Additionally, section 165 specifies that any ‘male person who.. . procures another male person to commit any act of gross indecency with him or attempts to procure the commission of any such act by any male person ... is guilty of a felony ... ’

Other former British colonies in Africa such as Malawi, Nigeria, Uganda and Zambia also criminalise consensual male-male sexual activity, often for ‘unnatural offences’. Legislation in these countries reflects UK domestic law-making from the Victorian period (Baudh 2008). Besides the legal
implications, men have to contend with several layers of stigma stemming from sex work and same-
sex activities. In the public view, male-to-male sex is often conceived as undermining and challenging
powerful assumptions about masculine behaviour and what it means to be a ‘real’ man (Costigan and
Foreman 2002).

Adding to this is the fact that political, civil and religious leaders frequently make unambiguous public
statements that same-sex behaviour is incompatible with traditional ‘African’ culture (Murray and
Roscoe 1998; Kiama 1999; Allman et al. 2007). In Kenya the issue of homosexuality evokes much
debate and is emotionally charged. Two former Kenyan presidents are on record disputing the
existence and practice of homosexuality, stating that it was ‘un-African’ and ‘even in religion, it is
considered a great sin’ (Kiama 1998). Leaders across sectors ‘close ranks’ on this issue, condemning
same-sex relationships and invoking religious and cultural reasons to justify their opposition.

Prejudice against men having sex with men, oftentimes expressed as homophobia, limits
opportunities for learning about risks of HIV infection and may lead to alienation from HIV prevention
and care programs (Onyango-Ouma, Birungi, and Geibel 2005). In most of Kenya there are no health
services that adequately address the diagnosis and treatment of sexually transmitted infections (STIs)
for members of these population groups. Furthermore, effects of this neglect are exacerbated by
socio-economic vulnerability in these settings (UNAIDS 2006).

In Kenya, there has been a near exclusive focus on preventing HIV transmission through vaginal sex
or from a mother to her child. There is a long history of providing outreach services to sex workers in
many parts of Kenya, including peer mediated interventions, HIV/AIDS prevention and control and
poverty alleviation strategies (Ngugi et al. 1988; Moses et al. 1991; Luchters et al. 2008). However,
male sex workers are seldom targeted in these projects. This paper aims to enhance understanding
of the dynamics of male-to-male sexual activities within the context of commercial sex in Kenya and to
guide configuration of targeted HIV prevention services.

Methods

Study setting

Mombasa district, in Kenya’s Coast Province, is the site of this study, which took place from October
to December 2006. The district has a population of about one million and is a major regional
economic centre, with important tourism, port, rail and industrial enterprises. Evidence suggests that
the number of men having sex with men in Kenya’s coast region is large (Murray and Roscoe 1998;
Geibel et al. 2007) and that both Kenyan and foreign tourism are linked with transactional sex in
Mombasa and nearby areas (Kiama 1999; Kibicho 2003). This evidence prompted this study, which was done in consultation with the Coast Provincial Medical Office and the Kenya National AIDS Control Council. The study is also a response to the National HIV/AIDS Strategic Plan, which stipulates that men having sex with men be included in behaviour change communication for most-at-risk groups (National AIDS Control Council 2005).

**Recruitment and initial contact**

The study followed a capture-recapture exercise consisting of a mapping and two enumerations one week apart, which located 65 meeting points and estimated 739 male sex workers selling sex to men in May 2006 in Mombasa and its environs (Geibel et al. 2007). Initial contact was made through 12 peer mobilisers familiar with male sex work in Mombasa. Potential participants were approached in bars, nightclubs, private brothels, beach areas and other community settings. To be eligible for participation, men had to be 16 years or older and active in Mombasa district. For study purposes, a male sex worker was defined as any man who ‘recently sold and/or is currently willing to sell sex to other men in exchange for money or goods’.

**Phase I**

Structured interviews with 425 men provide background demographic and behavioural data for this study, described in detail elsewhere (Geibel et al. 2008). Men were a median 26 years old (IQR ¼ 22 – 31), almost all were Kenyan citizens (98.4%; 418/425) and the majority had completed primary school or higher levels of education (68.5%; 291/425). A substantial number (41.7%; 177/425) reported sex work as their sole income source and more than half the sample uses their income for supporting their family or friends (56.7%; 241/425). During last anal sex with clients, more men reported insertive sexual roles than receptive ones (57.6%; 242/420 versus 34.8%; 146/420), with only a few combining insertive and receptive roles (7.6%; 32/420). In the past seven days, participants had had a median of two male partners (IQR ¼ 1 – 3; range ¼ 0 – 10). Over 80% stated that their last male client was Kenyan. Most respondents (67.1%) had ever had sex with a woman and a quarter (25.4%) reported having sex with a non-paying female partner in the past 30 days. Over 12% had experienced physical abuse in the past year, while 9.9% had been sexually assaulted or raped over the same period (42/425). Only one-third reported consistent condom use in the past month for insertive or receptive anal sex with male clients (36.0%; 153/425), a figure not surprising given that only 35.3% of those interviewed knew HIV could be transmitted through anal sex.
**Phase II**

Data presented here describes the experiences of 36 men who reported exchanging sex for money, drawing on three focus group discussions (FGDs) and ten in-depth interviews (IDIs). Study staff identified candidates for either group or individual discussions from among those participating in the Phase I survey. In this process (non-random purposeful selection), staff made a subjective assessment of the likelihood that participants would share their experiences openly.

Men were identified for pre-determined IDI sub-groups (men who have sex with both men and women; men who have sex with men only; men living with a male partner; younger sex workers (16 – 24 years); men older than 25 years; men who sell sex to Kenyans only; men who sell sex to international tourists; men tested for HIV; men seeking clients in multiple venues; and men in high socio-economic strata). While IDIs sought detailed insights on topics at the individual level, FGDs were conducted to elicit debate or consensus on the same topics from pre-selected subgroups (men who engage in primarily receptive anal sex, men who engage in primarily insertive anal sex and a third group inclusive of both). The age range of participants was 17 – 45 years, with 8 – 10 men per focus group. For both the in-depth and focus group discussions, identification and definition of these subgroups was based on formative consultations with male sex workers conducted prior to implementation of this study.

A standardised interview guide was developed with open-ended questions followed by probes. The guide was customised for both individual and group participants. Interview instruments specifically sought to establish: the context of first sexual experiences; processes of obtaining clients and negotiations (sexual geography); sexual practices and roles; condom use and risk of HIV infection; partner relations; sexual identity; stigma and discrimination; and access to health services.

Trained researchers facilitated the interviews in Kiswahili. The interviews were tape recorded, transcribed verbatim, translated to English and analysed using QSR NVivo 7 Software q.

**Ethical aspects**

The Kenyatta National Hospital Ethics and Review Committee in Kenya and the Institutional Review Board of the Population Council, reviewed and approved the study. Written informed consent to interviewing and audio recording of responses was obtained from all interviewees. Participants received 300 Kenya Shillings (US$ 4.50) for transport reimbursement.

Condom promotion and provision occurred during the quantitative and qualitative phases of the study. Participants also received printed materials on STI, including HIV and referral for HIV testing and counselling. To further promote the health of participants, the interview team was trained to
identify respondents who could benefit from free STI treatment or referral and linked participants with such services, where applicable.

Concerns about participant confidentiality and safety made it preferable to have interviews at central venues. For similar reasons participants were asked to provide a nickname during FGDs, which they were encouraged to use when referring to other participants. Pseudonyms are used in presentation of study findings and other participant identifiers are avoided.

Results

Several broad themes were noted in analysis of male sex workers' experiences. These are grouped as follows: first sexual experience; meeting points for obtaining clients; stigma and discrimination; condom use and perceptions of risk for HIV infection.

Context of first sexual encounter and entry into sex work

Respondents' first sexual experience with men occurred in quite varied circumstances. In general, these experiences can be dichotomised as either being clearly consensual or coerced and as occurring either with people well known to them or with complete strangers. Men interpreted their first experiences in terms that included love, sexual exploration, coercion and, predominately, financial incentives. Initial contact with sexual partners was often made in familiar social spaces such as workplaces, schools, public parks, beach areas and other communal settings. In the descriptions of first sex with people well known to them, sexual behaviour often progressed gradually over successive meetings, from physical attraction and appreciative looks to touching, kissing and cuddling, ultimately becoming more intimate and culminating in penetrative anal sex.

For men whose first sexual encounter was at a young age, initiations into homosexual relationships were described as gradual and ‘easy’ and generally involved people they knew and were comfortable with. In a one-on-one interview, Sam (19 years) explains:

“I have always liked men...we used to touch one another and joke about our sexuality... then one day at the beach we decided with my friends to try to have sex and see what happens. That was the first time; we then continued to have sex at home and in school toilets.”

Men’s narratives often mentioned love and affection and were congruent with accounts of romantic attraction to other men or experiencing pleasure and having sex with other men as part of sexual development. In a deeply personal way, John (age 18) told us of his first sexual experience and how he began selling sex:
“This began when I was in school in class six [about 11 years] and I was first penetrated by my school mate. I was not doing it for money at that time because I did not know what it was all about. All I know is that I loved him ... after I finished class 8, I began commercial sex. This was due to financial problems we have in the family. My parents could not provide clothing and other things that I wanted, and here was money I could make.”

Conversely, some men reported entering into a sexual transaction involving anal sex the same day they met with strangers. These decisions were unplanned and influenced largely by an envisaged immediate financial or material gain.

This tended to occur among men at an older age and was strongly linked with livelihood opportunities, even as an easy means of survival as well as of acquiring accessories such as phones, shoes and clothing. Minimal probing showed that unemployment and poverty were the overriding drivers. During an IDI, Ken (28 years) explained the circumstances in which he first had sex with another man, demonstrating the key role of poverty in sex work:

“When I first came to Mombasa, I used to visit a local car park. A man came in a car, he called me and talked to me. At first I did not understand. He promised to pay me if I did what he wanted. Since I did not have money I agreed.”

For his part, Tim (45 years) described how, upon becoming unemployed, he had no other means of providing for his family. One day when he happened to be in a place where sex work negotiations commonly take place, he was offered money for sex. Tim said that he would stop sex work if he found another way to support his wife and children.

In some cases, initial penetrative sex and subsequent acts were the result of sexual exploitation by friends, relatives or other people trusted and well known to the individuals. This is precisely the point made evident in the comment of Musa (21 years) who noted:

“My father's friend was very close to me ... when my father died he took care of me and one of my brothers. He used to have sex with us. My brother was about 12 and I was 14. He paid school fees for both of us for two years before he also died. When he died I had to take care of things and therefore I got into this business [sex work].”

Though no informants reported that their first sexual act was physically forced, cases of cross-generation luring and/or financial coercion had occurred. Often, reports suggested that both subtle and overt coercive strategies were employed by older men. For example, Moha, now 35 years old, explained:
“I was employed as house help. One day my employer asked me if I wanted to have sex with him. He told me that he would add my salary. I agreed and that is how I started.”

In these circumstances, considerable power imbalances between partners meant that safe sex was only feasible if the perpetrator opted for protection, which none of our informants mentioned had occurred. For some men, the practice of unsafe sex with their initial partners appeared to extend to sex with subsequent partners, a pattern common to reports of women who have experienced sexual violence (WHO 2005).

Overall, men’s first sexual experiences were often recounted with distinct ambivalence. Regardless of whether initial sexual activity was consensual or coerced, a striking commonality in the narratives is the role played by the promise of material or financial reward. Perhaps no other respondent made this linkage clearer than Kim (age unknown), who explained:

“I would say selling sex began with him [first man he had sex with in school] because sometimes after we had sex, he used to ask me what I wanted, and he gave me.”

**Sexual geography**

Examination of solicitation practices provides us with an outline of the different territories where clients are acquired and negotiation of sexual exchanges take place. The discourse around stigma and criminalisation of same-sex relationships overwhelmingly shapes where the pursuit of clients occurs. Meeting points are predominately clandestine, known only to sex workers and their client networks. These locales appear to shift rapidly between day and night for fear of arrest and from the need to evade public hostility.

These meeting locations are diverse and often closely match an individual’s socio-economic class and age. The demographics and behaviours of clients (and male sex workers) are thus somewhat specific to a location. Participants in higher social or economic groups reported contacting clients via mobile phones or visiting ‘stylish’ and secluded locations, such as beach hotels or more exclusive upmarket nightclubs. More experienced and older informants operated from multiple locations outside of Mombasa. Others mentioned having a network of foreign clients and making occasional visits abroad.

Conversely, participants in lower socio-economic groups – more often younger sex workers – mentioned soliciting clients within their local neighbourhood. Favourite meeting spots for this group include community nightclubs, video halls, beach areas, public parks and backstreet or mainstreet locations known to them and offer anonymity and/or secrecy. Once contact has been made, negotiation occurs about the type of sexual activity, price and place. Sex workers based in nightclubs.
described how these agreements are reached while drinking with a client. Both street- and club-based sex workers noted that discussion around condom use only forms a minor component of negotiation, if mentioned at all. Additionally, some street-based venues intrinsically hinder safer sex practices as prevention commodities like condoms or lubricants are not readily available.

According to informants in poorer locations, identifying and successfully concluding speedy negotiations with clients is critical, particularly in the potentially dangerous terrain of public meeting points. Securing clients is achieved using well-rehearsed, non-verbal methods. Men thus position themselves to ‘assess’ and ‘signal’ to potential sexual partners. Long discussions about safer sex are seemingly out of the question and negotiations mostly cover type of sexual activity. One of the focus group respondents observed:

“When I am on the road [streets] at night, I dress differently, I walk and behave differently. A person who is interested will know that you are on the market [selling sex]. Even on the beaches they will know you from your dress and behaviour.”

By and large, success of male sex work is dependent on level of experience, a network of contacts and knowledge of where clients can be obtained. Usually, contact between clients and sex workers occurs without sex-work intermediaries like pimps. However, some informants reported a degree of reliance on informants, friends or newly-acquired clients of friends. Bar waiters and other staff in drinking and entertainment venues are especially useful links. Kelly had this view:

“If one of my colleagues has got one [client] already and I have not yet ‘fished’ one I will have to wait or use the client my friend has got to link me with other clients and sometimes we use waiters. We usually give them a tip ... there is a lot of co-ordination you know ... waiters play a very big role.”

Several men described the use of alcohol and drugs, especially miraa (cartha edulis) as a common pastime. Jim, a middle-aged married man who leads two lives – as a husband and father during the day and as a sex worker at night in the backstreets of Mombasa – says he often chews miraa or ‘depending on money in [his] pocket’ drinks alcohol in his favourite location while awaiting clients.

Most sexual encounters involve selling receptive or insertive anal sex, or occasionally both, but masturbation and oral sex are also practised. When asked, none of the men in the group or individual discussions reported ever having had group sex. Some sexual transactions may occur over a period of hours in lodges or private homes, but some sexual activity also takes place ‘quickly’ in public parks, beach areas, unused buildings or similar places.
In summary, the criminalisation and stigmatisation of male-to-male sex, limited negotiation processes, power imbalances in safer sex negotiation and alcohol or drug use portend risky sexual acts for men. Moreover, as Bloor et al. (1993) observe, communication during transactional sex is replete with ambiguity, which includes whether or not safer sex will be practised.

**Stigma, discrimination and violence**

We aimed to thoroughly explore the types and sources of stigma and discrimination faced by our participants. Several respondents cited instances of police harassment, arbitrary arrests for loitering and extortion for money or sexual services. Clients were also reported to inflict abuse upon the men through verbal or physical harassment by not paying after sex or by abandoning them in remote locations. Often, the general public were reported to verbally or physically abuse the street-based sex workers. Many accepted this violence as ‘normal’ or as ‘part of the job’. For some, feminine appearance, behaviour or clothing invited ridicule. To attest to these experiences, a respondent mentioned being called dume jike (‘man-woman’) because of his effeminate looks. Others reported being ostracised by close family members or friends. Another focus group participant reiterated this point:

“I have been discriminated against, where people feel that I am a person of no value. My sisters feel I am useless. They ask why I... do things that a woman should do.”

It was clear that many sex workers live with secrecy and fear. Men living with their parents or having formal employment mentioned the ‘high cost’ of being exposed. For them this would signal a loss of vital proximal and distal networks of family and friends and employment. During a one-on-one interview, Jami, aged 18, very aptly demonstrated this view:

“My parents don’t like it, they hate it [sex with other men] they suspect I am doing it and I pretend I don’t, so I normally hide my male partner relations or else I can’t get anything from them [parents].”

Evictions by landlords are commonly reported by African men who have sex with men in other settings (Niang et al. 2003; Onyango-Ouma 2005) and this was also reported by the Mombasa sex workers. In-depth interview participant Joe (age 45) described how suspicion by neighbours led to his eviction from a rented house:

“According to me it is highly secret [anal sex], but people can detect ... when people [neighbours] came to know that I do this, I was told to vacate a house I was renting. I had to move before getting another house. My belongings were thrown out and in the course of this, I lost some of my belongings.”
After the incident he said:

“*These days I don’t stay in one place for more than six months, I keep on moving from one place to another.*”

According to Ca´ceres, Aggleton and Galea (2008) stigma may lead to self-segregation or forced migrations among vulnerable populations. Jamal (IDI participant, age 28), who engaged in insertive anal sex only, describes how this process of separation can take place:

“... *these days I don’t talk much ... a very close friend of mine used to see me interact with different people [men], one day he asked me why I was talking to people some of whom looked like homosexuals. He later talked ill things against me ... even colleagues at my work came to know about this. I almost lost my job.*”

Most participants spoke of having to make difficult decisions when they became ill, as they feared prejudice in both public and private health facilities. Few health facilities or staff are responsive to their needs, particularly when seeking treatment for rectal infections. This situation leads many to seek care from unqualified health professionals or even to self-medicate. Ali (age 26) summed this up:

“Services in government hospitals are not good. You will be looked down upon, they can even send you away ... or ask you insensitive questions; you see we really need a lot of confidentiality.”

Participants in Ali’s focus group agreed with these views and expressed a reluctance to visit public health facilities. Another discussant averred:

“... when I met the doctor I did not tell him exactly what I was suffering from [rectal infection], I changed what I had to tell him, and only said that I was suffering from a headache.”

These participant’s narratives powerfully evince the burden of stigma faced from family, friends and society. Like other groups of men in Kenya, most respondents mitigate this by attempting to evade scrutiny; adopting tactics like self-segregation, hiding their sexual identity or seeking social acceptance through marriage or having girlfriends. Most men practicing receptive or insertive roles said that they attempt to pass as heterosexual in the heteronormative society. During an IDI, Kasim (age 34) described the steps he took to conform to social expectations:

“... I am expected to marry, so I have a wife with two children. We love each other ... but I would like to tell you that my feelings for men is much stronger than that for women, *that’s why I have intimate relationships with men.*”
In all, only a few men like Brown (aged 27), who has a relatively high socio-economic status, felt confident in dealing with stigma. He achieves this by ‘carefully selecting’ clients he has sex with and staying away from mtaa [housing estates] where he is likely to be stigmatised. He states:

"... I have not experienced that [stigma] because I don't engage in sex with just anybody. It is also because I go to private hospitals when sick ... there was some stigma in the mtaa and I moved to another mtaa the moment I felt it ... I select married men because they have families, careers, image etc., which they would not want to risk."

Interestingly, it appears married men formed a common client group for our participants, which has been noted in other studies (Estep, Waldorf, and Marota 1992; Morse et al. 1992).

**Condom use and perceptions of HIV risk**

Although a ‘casual relationship’ between homosexuality, unsafe sex and HIV infection has been dominant in HIV and AIDS discourses in the West (Wolitski et al. 2001; CDC 2005) there is limited evidence for this in Kenya. To obtain more detailed information, participants were asked about frequency of condom use and factors that influence this, including perceptions of risk for HIV acquisition.

Of the ten men who participated in IDIs, only two reported insisting on condom use, declining clients unwilling to use a condom. Firstly, Brown reported consistent condom use with clients by choosing men carefully based on criteria of ‘career and image’. The other, Karim, provided this explanation:

"I insist on condom use because in the long run you can use all the money you get from clients to treat yourself."

Although both men called condoms ‘cumbersome’ because of the time taken to put them on and as they were seen as reducing pleasure, they considered condoms ‘very necessary’ to avoid infection with HIV or other STI. Also, men reporting condom use cited unavailability of water-based lubricants as a ‘major problem,’ opting instead to use oil-based lubricants owing to higher costs.

Respondents rated unprotected anal intercourse as more pleasurable than protected intercourse. In a focus group session, Lucky (age 23) expressed a common sentiment that:

"We are all aware that when you use a condom you don't get that maximum pleasure ... so as to get that maximum pleasure we have sex without a condom."

The idea of not using condoms with clients seemed normative; some sex workers even maintained that condom use was ‘rarely’ discussed with partners. Those proposing condoms with clients reported ‘facing resistance’, citing client desire for optimal sexual pleasure. To avoid using them,
some clients offer additional money for unprotected sex, which highlights the key role of the financial negotiation and transaction process for sex workers. The self-perception of the sex worker as a ‘businessman’ is reflected in a quote by Kale (age 27) who maintained that:

“This [sex work] is like a shop, what is important is to agree on the price. A shopkeeper does not care who comes into the shop.”

Many participants also expressed the view that using condoms with regular partners was difficult. It appears that levels of condom use decreased with degree of intimacy and stability of a relationship. As commonly reported within heterosexual relationships, suggestion of condom use by a regular partner often signifies ‘mistrust’ or is a reflection of having been ‘unfaithful’ or even ‘HIV-infected.’

In Kenya, the silence of HIV prevention programmes and lack of media reports on anal sex may reinforce perceptions that anal sex is not a high-risk sexual practice. Some informants held a conviction that they would not acquire HIV, despite having unprotected anal sex with both male and female partners. Some participants believed anal sex was ‘safer’ than vaginal sex and were more likely to report condom use for vaginal sex. Seif (age 24), a man who has sex with both men and women, expressed this view:

“There is AIDS and all these but I have never heard of anybody having a sexually transmitted infection in the anus ... mostly I think these diseases are found in the vagina and mouth, but I still can’t understand it well.”

Phil, a focus group participant, observed:

“I don’t believe that most men use condoms because with the information I get illness is in the vagina and not the anus ... I have never heard of anybody getting illness from the anus, even from our teachers.”

As mentioned earlier, alcohol is available in many sex work locales. Men seeking clients in nightclubs, beach areas and other community settings frequently mentioned use of alcohol and drugs. Many observed that this often leads to poor decision making, as even those reporting frequent condom use mention lack of such use when intoxicated. Tabu, (age 44) describes the effects of being intoxicated as:

“I mostly use condoms to protect myself from STIs including HIV. It is for my safety, but there are times when I am drunk, and then I don’t use a condom.”

Bright, (age 29), put it this way:

“When drunk or high you are unable to think properly. When in this state you can easily get into unprotected sex.”
This finding is consistent with findings from studies in other sub-Saharan African contexts where alcohol consumption was associated with unprotected sexual intercourse (Stall 2001; Chersich et al. 2007; Kalichman et al. 2007; Lane et al. 2008; Parry et al. 2008). Similar to what Diaz and Ayala (1999) and Parry et al. (2008) reported, getting drunk or high on drugs was associated with ‘relieving stress’, ‘passing time’ or ‘instilling courage’ prior to selling sex.

It is evident that the practise of unprotected sex is underlined by a dynamic interplay between sex workers and clients. Similar attitudes and condom practises have previously been documented (Colby et al. 2004; Kalichman et al. 2007; Parry et al. 2008). Key factors are: power relations; notions of trust; sexual pleasure; alcohol and drug use; and a belief that male-to-male sex has low risks of HIV transmission. Most importantly perhaps, as noted elsewhere, the practice of unsafe sex occurs where clients are in control of the encounter and sex workers are unable to contest that control (Browne and Minichiello 1995).

**Conclusion**

In seeking to explore the lives of male sex workers this study documented the dynamics of male-male sexual activity and their implications for vulnerability to HIV and overall well-being and health. Reflecting on our findings, we note that alongside individual risk behaviours of participants there exists a range and variation of specific groups, such as low socio-economic strata, younger, aged and incarcerated men, that even further magnifies these risks (Ca´ceres, Aggleton, and Galea 2008). Also, both phases of the study found that most clients are Kenyan, contrary to occasional public pronouncements that male-to-male sex is a foreign import.

Why then does male sexual activity take place and how do such notions apply in this population? According to Plummer (1995), male-to-male sexual experience is classified within four categories, namely casual homosexuality, situational homosexuality, personalised homosexuality and homosexuality as a way of life. He explains that schoolboy crushes or masturbation, sexual activity in prisons or military camps, secret homosexual desires and open acknowledgment of homosexual preference, respectively, fit these classifications. In Kenya, male-to-male sex of a situational nature has previously been documented where men are in closed settings (Kiama 1999; Mathenge 2008).

However, it is difficult to apply Plummer’s categorisation to our population in simple terms. For many men in this study, male-to-male sex is motivated largely by financial incentives and not as a way of life per se. This, however, is not to say that male-male sex is limited to economic motives alone in this setting. Sex with other men occurred also due to same-sex desire, socio-economic circumstance or a combination thereof.
The study also provides insight into the relationship between health and place. Although understandings of solicitation practices are complex (Macintyre, MacIver, and Sooman 1993; Flowers, Marriot, and Hart 2000), this study explains, in part, its nexus with high-risk behaviour.

The chances of negotiating or acquiring commodities to make sex safer decreases with the social class of the location and although social class classification has limitations in measuring health (Naidoo and Wills 2000), it does serve as an important indicator of living conditions and access to services. Also, as previously described (de Wit et al. 1997), the number of anal sexual partners and acts vary according to venue in which sex occurs. All this suggests locale-based interventional approaches are required for different sex work settings (Flowers, Marriot, and Hart 2000).

Beyond this, narratives of public prejudice and family ostracism depict the extent of social exclusion experienced by male sex workers. This link has important implications for sexual behaviour, partner relationships and HIV vulnerability. Perceived societal norms bar many men from openly discussing their same-sex experiences or seeking health services. Social structure and beliefs tolerate stigma and violence against these men. Escoffer (1997) and Ca´ceres, Aggleton and Galea (2008) argue that stigma frequently promotes increased mobility and vulnerability for such marginalised population groups. Additionally, considerations for family honour and social standing are associated with maintaining concurrent heterosexual relationships. This has potential implications for the broader HIV epidemic, given that male-male sexual networks are often integrated with the general population.

To reduce HIV and STI transmission in male sex work settings in Mombasa, results from the quantitative and this qualitative study were analyzed and used to inform the development of health interventions. Firstly, patterns of self-identification, client-seeking and healthcare avoidance described by informants indicated that an outreach strategy driven by the men themselves might be most effective in reaching peers. Thus, to help facilitate delivery of health information and referrals for STI services, 40 men were recruited as peer educators and trained in basic HIV prevention, harm reduction (hazardous use of alcohol and drugs) and as HIV testing counsellors. Negative experiences at healthcare facilities were described by participants. This showed that local health workers were not trained or familiar with anal STI issues, prevention information specific to male-to-male practices or in the public health importance of sensitivity and confidentiality towards these men. To respond to this concern, 20 health service providers in Mombasa attended a workshop to sensitize them to the health-related needs of male sex workers and on recognizing anal STI symptoms and tailoring HIV prevention advice. These are key first steps towards addressing the unmet prevention needs of men having sex with men in Mombasa.
Our study has some limitations. Although selection of participants according to pre-selected categories enabled the study to capture a range of experiences, the sample may not be representative of the sex worker population.

Interview subgroups and discussion topics were also selected based on formative discussions conducted prior to survey implementation and may not have included important issues that emerged in the first phase quantitative survey. Some of the reported norms, patterns and behaviours may also be specific to the local sex work context in Mombasa, although there are likely broad commonalities between the experiences of this group and those of other male sex workers in Kenya and other African countries.

Overall, findings from this study show that HIV prevention needs of men having sex with men have been largely overlooked. However, policymakers in Kenya have shown an increased willingness to review the evidence and address the issue. Further acknowledgement by African HIV coordinating bodies, as well as informed public discussion, are important steps forward. Evidence indicates that increased awareness and understanding of same-sex issues helps mitigate HIV vulnerability and results in policy action and improved services (De Graaf et al. 1994; Ca´ceres et al. 2006; Baral et al. 2007; Saavedra, Antonio Izazola-Licea, and Beyrer 2008). In Africa, comprehensive HIV strategies that include specifically tailored HIV prevention, STI treatment and condom and lubricant provision for men are urgently needed. To facilitate delivery of these services, it is important that healthcare systems be sensitised and equipped to serve these men in confidential and non-judgmental environments. In Mombasa, targeted interventions that consider the diverse motivations, socio-economic backgrounds, solicitation patterns and sexual behaviours of male sex workers are also recommended.
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References


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5. OTHER KEY POPULATION GROUPS OF INTEREST
Article 5

5.1 Changes in sexual risk taking with antiretroviral treatment: influence of context and gender norms in Mombasa, Kenya

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Changes in sexual risk taking with antiretroviral treatment: influence of context and gender norms in Mombasa, Kenya

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In-depth interviews were conducted with 23 sexually-active adults receiving antiretroviral treatment (ART) in Mombasa Kenya to understand changes in sexual behaviour after treatment initiation and factors influencing condom use. Advanced HIV disease had previously led to marked decreases in sexual desire and function. After HIV testing, numbers of partners reduced and monogamous relationships began to predominate. Receipt of ART strengthened these changes, while improving sexual health. However, concurrent sexual partnerships continue within polygamous marriage and unprotected sex occurs with regular partners, even those who are HIV-negative. Those who used condoms inconsistently prior to ART often remained inconsistent users thereafter. While disclosure of HIV status appeared to support condom use, this does not always predict protected sex. In addition to classic perceptions about condom’s effect on intimacy and trust, traditional gender roles, misconceptions about potential harm from condoms and fertility desires hinder condom use.

\textbf{Keywords:} HIV/AIDS; HIV prevention; Kenya; sexual behaviour; sexuality
Introduction

Access to antiretroviral treatment (ART) has expanded rapidly in low- and middle-income countries (WHO 2007). Antiretroviral treatment leads to dramatic declines in morbidity and mortality from HIV disease and to improved well-being, including in sexual health and function (Crum et al. 2006). There is, however, concern that sexual risk taking may increase with ART, especially in the long run once health improves and people resume or increase sexual activity. In recent years, studies in high-income countries with men who have sex with men have documented a rise in unprotected sex and incidence of sexually transmitted infections (STIs) including HIV (Stolte et al. 2001; Chen et al. 2002). Among heterosexual people receiving ART in those settings, an increased risk of acquiring STIs has also been documented (Scheer et al. 2001). Research in some African settings suggests that although some risk behaviours actually decrease with ART, a substantial proportion continue to have unsafe sex, even with partners known to be HIV-negative (Moatti et al. 2003; Bunnell et al. 2006; Luchters et al. 2008; Sarna et al. 2008a). A Côte d'Ivoire study reported a short-term increase in unsafe behaviours commencing after ART initiation (Diabate, Alary, and Koffi 2008).

Several frameworks can be used to analyse sexual behaviour in those receiving ART. Based on the theory of reasoned action, for example, one might assume that individuals consider the consequences of sexual behaviours before performing them (Fishbein and Ajzen 1975). According to this theory, intention determines behaviour and people make systematic use of the information provided to them. Enquiry about attitudes to condoms and how a person intends to behave, all provide useful insights consistent with this theory. However, human sexual behaviours – already intrinsically complex – are situated within multidimensional contexts and people’s intentions may be thwarted by lack of behavioural control (Miller 2005). Socio-cultural and structural factors also shape the world in which we live.

The theory of planned behaviour is more cognisant that circumstances may limit an individual’s perceived ability to execute a particular behaviour (Ajzen 1985). This can usefully explore factors that account for differences between a person’s intended and actual sexual behaviour. For example, in sub-Saharan Africa some attempts have been made to create a legislative and structural environment that is more conducive to making rational choices, which are, in turn, health promoting. This includes national policies on wider access to HIV testing and free-at-point-of-care ART services; prohibition of discrimination on the basis of HIV status; and social support from non-governmental or community-based organizations.
Yet these changes may be insufficient in and of themselves. Importantly, culturally-sanctioned gender roles influence sexual relationships (O'Sullivan et al. 2006). Safer sex practices may be difficult for women to enact because self-protection is compromised by fears of reduced intimacy, by experience of abusive partners, economic constraints or by prevailing social norms about women’s passivity within sexual relationships (Kaufman et al. 2005; Strebel et al. 2006). Gender attitudes and sexual power differentials also manifest as gender-based violence, which in turn may be fuelled by unemployment, poverty and alcohol use (Kaufman et al. 2005). Further, disclosure of HIV status is often associated with a marked anxiety and fears of rejection, which hinders safe sex (Olley, Seedat, and Stein 2004; Kaplan, Scheyett, and Golin 2005; Kerrigan et al. 2006; Kiene et al. 2006).

Overall, however, there is little information on how the above considerations impact on people receiving ART in sub-Saharan Africa. This qualitative study examined changes in sexual behaviour with ART and the contextual factors that affect control over these behaviours among persons receiving ART in Kenya. Participants were drawn from a longitudinal study investigating quantitative changes in sexual behaviour over 12 months. Both studies were nested within a trial evaluating effectiveness of modified directly-observed therapy to promote ART adherence (Sarna et al. 2008b). Here, we report aspects of sexual health, gender roles and relationship functioning that influence safe sex after ART initiation.

**Methods**

In-depth interviews were held with sexually-active adults receiving ART (11 women and 12 men). The interviews, from January to March 2005, set out to obtain a more comprehensive understanding of sexual activity, desire and risk behaviours; and included enquiry about: multiple and concurrent sex partners; condom use in different types of partnerships; gender roles and gender-based violence; vengeance and anger related to unsafe sex; and fertility intentions.

Participants were selected using stratified purposeful sampling. This selects samples within samples, by choosing cases that vary on a key dimension (cases nested within specific stratum) (Patton 2001). In this case, a random sub-sample was selected from individuals with varying condom use and HIV status of sexual partners, based on self-reported information given at the time of ART initiation. Efforts were also made to include those participants considered most likely to share their experiences openly. Three people were chosen from those reporting inconsistent condom use with HIV-negative partners and four from each of the following groups: consistent
condom use with HIV-negative partners; consistent condom use with partners of unknown HIV status; inconsistent condom use with partners of unknown HIV status; consistent condom use with HIV-positive partners; and inconsistent condom use with HIV-positive partners.

Participants' age ranged from 25 to 54 years, with a median age of 36 years (IQR: 33 – 40). Median duration between HIV diagnosis and initiating ART was 6 months (range: 1 – 60; IQR: 1 – 18). Thirteen of the 23 participants had been tested less than 6 months before initiating ART, while 7 had been tested more than 18 months prior to initiation. At the time of interview, participants had been receiving ART for between 9 – 12 months. All were taking first-line regimens containing zidovudine or stavudine; lamivudine and either efavirenz or nevirapine. At ART initiation, the CD4 cell count was a median 91 cells/mm³ (IQR: 45 – 153), but had increased by a median 199 cells/mm³ (IQR: 126 – 270) after 6 months ART.

**Interviews and data analysis**

Participants gave written informed consent. Ethical approval for the study was obtained from the Kenyatta National Hospital Ethical Research Committee and Institutional Review Board of the Population Council. Prior to initiating ART, all participants attended three one-on-one counselling sessions with trained nurse counsellors that included counselling on routes of HIV transmission; the benefits of condom use; and the importance of disclosure and partner testing. During routine follow-up visits, participants also received positive prevention messages.

The interview guide was developed in consultation with the field team and HIV-positive peers. The guide was translated into Swahili, and field tested for clarity of language, comprehension and content. Interviews were held in English or Swahili in line with interviewee preference. In an attempt to reduce social-desirability bias, same-sex interviewers were used who had not been involved in providing care or patient counselling. The interviewers, all with some prior tertiary-level education and experience in HIV research, had received specific training in qualitative data collection techniques and in gathering information in a non-judgmental manner.

Interviews, each taking about an hour, were recorded verbatim on audio tape with accompanying interviewer notes and then translated and transcribed in English. During data analysis, two members of the research team read the interviews independently, identified broad themes and generated descriptive categories and codes. Codes were then compared, a final code list prepared by consensus and data coded as per the agreed list. Coded text was then read by the two researchers and results were discussed and interpreted jointly. Content analysis was done using Atlas ti version 5.0 (Berlin, Germany).
Results

We look first at the effects of ART on sexual activity and desire. These effects are contrasted with changes in sexual behaviour that previously occurred with progression of HIV disease and around the time of HIV diagnosis. How improvements in sexual function impact on partner number and condom use is also explored. Subsequently, we detail the contextual factors that influence sexual behaviour in people receiving ART. In addition to social and economic issues, the pivotal influence of prevailing gender norms is focused upon.

Effects of antiretroviral treatment on sexual function, partnering and condom use

Variation in sexual activity and desire

Male respondents, almost without exception felt that sexual function had been severely affected by HIV disease, with a marked reduction in both sexual desire and activity, including prolonged periods of abstinence. These changes were, in part, reversed by ART, as explained below:

“Before I started using my drugs [ART] my health had deteriorated so much, that I could not do sex completely ... since I started drugs, I have gained back my health as compared to the past when it had deteriorated. Like two years [in the past] I have lived without any sexual relationship.” (Otieno, 40 years, unemployed)

Otieno’s CD4 cell count increased by 380 cells/mm³ after 12 months ART from a baseline 34 cells/mm³. Although men reported a gradual return of interest in sex once ART was initiated, the physical ability to engage in, and in their words ‘satisfactorily complete’, sexual intercourse was, however, not completely restored.

Among female participants, some reported that sexual desire had reduced with HIV disease, while nearly half had experienced no long-term fluctuation in sexual function. Mariam, described her experiences this way:

“I don’t have any urge at all ... I used to be fine before ... I have no worries or sadness, but I see it [sex] as if I am being troubled, I don’t see the need [for sex] at all as of now, considering my status.” (Mariam, 48 years, unemployed)

In contrast, a few actually stated that sexual desire had increased markedly with ART. For example, a woman with an HIV-positive regular partner, candidly declared:
“When I use these medications [ART] the sexual urge is very high ... yes, higher than before; I become like a teenager ... you just feel hot. If you don’t know how to control yourself you can mess up [have unprotected sex and infect someone].” (Jacinta, 36 years, housewife)

Misconceptions about interactions between sexual activity and antiretroviral medication were fairly common. A widowed, sexually-active female, for example, linked sexual activity with reduced effectiveness of ART:

“You know if you do that [sex], the drugs won’t work properly, the more you do sex, the medicine doesn’t work. So if you want it to work you have to reduce [sex] and you know I value my body.” (Njeri, 25 years, unemployed)

Apart from one woman, none reported having had anal or oral sex and they attributed such sexual practices to foreigners. The woman had not used condoms during anal sex.

Antiretroviral treatment and monogamy

It was evident that people had made concerted and conscious efforts to change sexual behaviour and reduce partner number after initiating ART. Excepting one man and one woman, all participants reported having only one sexual partner at present:

“I have changed, I am not like before, I have actually been using protection so that I do not infect my HIV-negative wife, I also avoid having extra-marital affairs. [After knowing my HIV-status] I am able to control myself, this is the initiative I have taken now to control myself and have one partner.” (Mwaru, 33 years, unemployed)

All, barring one woman, reported multiple sexual partners in the past, prior to learning of their HIV-status. In describing their sexual behaviour in the period before HIV diagnosis, men indicated that paying for sex and having concurrent relationships was common. Men also associated multiple partners with being a bachelor, having uncontrollable desire and consuming alcohol – a previous high-risk lifestyle, as described by this married man:

“Truly, before I knew my status I had so many loves. On the way sometimes [when] I had desire to have sex just like that, I stopped ... I could have sex with a woman who was not my friend ... they were one-time lovers.” (Paul, 44 years, unemployed)
Another said:

“You know I cannot even remember some of these partners; I met them while I was drunk. I did not even know their faces in most cases I had blacked out.” (Mutisya, 39 years, unemployed)

Among women, even prior to an HIV diagnosis, serially monogamous relationships were generally the norm as described by a widow:

“The one before [my second partner] was my husband, he died ... Actually the first boyfriend was a high school friend and he is okay [alive and well]. I was with my present husband [third partner] for one year then he died [since] then [I am with] this one [current HIV-negative partner].” (Njeri, 25 years, unemployed)

A few women did, however, mention previously having concurrent partners. For both male and female participants, then, a transition from multiple partners to a single regular partner began at the time of HIV testing and the resolve to stay monogamous was further strengthened by commencement of ART.

Disclosure effects

The only two women who were not sexually active at the time of interview had disclosed their status to their partners, but they declined to be tested. This, the women said had led them to adopt abstinence for fear of infecting their partner, with one female framing this as:

“I told him ‘if you get infected with a disease you will go around telling people that I have infected you and spoil my name’ ... so for now I don’t have any sexual relations.” (Agnes, 54 years, unemployed)

For most, however, disclosure and couple counselling with enhanced mutual support played a central role in sustaining safe sex. Several men reported that while the decision to disclose was difficult to make, once this had occurred, their partners’ initial and subsequent reaction had been characterized by acceptance. One man, with an HIV-negative spouse, who was tested a month before initiating ART describes his experience:

“... after around two months since I started taking this medication ... a community health worker told me the best thing to do was ask her [his wife] to accompany me to the clinic ... at the clinic she learnt, that I am positive and that I take ARVs ... she told me she has forgiven me ... she is a very generous woman.” (Kariuki, 39 years, unemployed)
With the exception of one man, all respondents had disclosed their HIV status to their regular partners. Both sexes mentioned that disclosure actually strengthened the relationship between partners and they were able to ‘get on with life’ and increase mutual support. Disclosure was associated with a sense of relief, a lifting of the burden of guilt and an enhancing sense of ‘comfort’ in a relationship, as described by this man about his HIV-positive wife:

“She took it [disclosure of HIV-status] well, so I told her to go with me to be tested so that we know our status and know how we are going to live ... it has helped me a lot because after she knew [her status], anytime I get problems she helps me ...” (Khamis, 44 years, unemployed)

In both concordant and discordant couples, disclosure of HIV status reportedly was often a confirmation of a long-standing suspicion that the partner was infected.

Increased condom use with antiretroviral treatment

As with partner reduction, consistent condom use seems to have increased following diagnosis of HIV and then been further reinforced by the experience of receiving ART and associated services. Prior to having an HIV test, the majority of study participants (19/23) reported never using condoms, with the remainder having used them intermittently, mostly for family planning purposes. One woman even said that the first time she ever saw a condom was at the VCT centre at the time of HIV testing. Interviewees in general acknowledged having a low level of awareness about HIV infection and safe sex practices prior to HIV testing, this married man offered:

“I never used to worry at all; I never knew there was such a disease like AIDS. I used to have sex indiscriminately.” (Chale, 39 years, unemployed)

Similarly a Grace, 38-year-old housewife said:

“I got to know how a condom looks like and how it is worn while already infected with HIV. I had not used one before ... when I tested positive at Port Reitz [hospital] that is when I first saw a condom because it was given to me.”

Among those who used condoms consistently at the time of initiating ART, almost all (11/12) indicated they had used condoms with each sex act since then. At the same time, three of the ten who reported inconsistent condom use at the time of initiating ART had started using them consistently, while the remaining seven remained inconsistent. Participants who reported consistent condom use at present often exhibited a strong resolve to maintain such use in the long run. This was most often seen with those who had an HIV-negative or unknown-status
partner. None reported difficulties with condom availability or procurement. Knowledge about HIV disease and transmission, apparently mostly obtained from health providers at the time of HIV diagnosis and during ART counselling, appeared to make a substantial contribution to consistent condom use. A man with an HIV-negative spouse stated that:

“I have so much confidence because I have realized that using a condom can prevent infection. You see, if I had earlier used a condom I would not have been in the situation that I find myself in now.” (Chale, 39 years, unemployed)

Another male respondent with a girlfriend of unknown HIV-status said:

“When you have sex without condoms, the person you are having sex with, whether she is infected or not, there are dangers on you is what I believe.” (Mwaru, 40 years, unemployed)

Though increased knowledge helped, condom negotiation remained challenging. A man with a spouse of unknown HIV status commented how his quest for protected sex occasionally met with refusal:

“I explained to her we use condoms, because I have the disease, so I will keep on adding more infections to her and also she will be adding more infections to me and then she tells me, she does not believe in that, lets do away with it.” (Omondi, 45 years, unemployed)

It appeared clear that respondents with partners of unknown HIV status who adamantly refused to test had experienced difficulties negotiating safe sex. A woman described this struggle with her husband of unknown HIV status as:

“He says ‘when I use them [condoms] I don’t feel any pleasure’ … I force him, I tell him that if he doesn’t want I leave him, we stay for a long time until in the end he accepts and uses it … then he complains the whole time, he quarrels. At times I try to dodge him; I dodge and dodge until I get tired …” (Zainab, 36 years, housewife)

In long relationships between discordant partners, a false sense of immunity interwoven with expressions of fatalism also obstructed condom use. A male with an HIV-negative spouse related:

“She told me that we have been having sex all these years and if it is death then I am ready to die with you; but since that day I was counselled on the importance of using condoms and I told her it is important we use condoms I feel like sleeping with her but sometimes I just restrain myself [do not have sex].” (Gideon, 34 years, gardener)
On the whole, both women and men were generally able to successfully negotiate, and even to make sex contingent on, condom use, like this unmarried man:

“After knowing that I was infected, I refused completely to do sex without condoms. We negotiated, I explained to her that she should only use those other family planning methods and [that] I will use condoms; whether she uses family planning pills or injections.” (Mwaru, 40 years, unemployed)

Thus, in summary, though sexual function was restored, if not completely, by ART, a concomitant reduction in concurrent partners and a general increase in condom use meant that unsafe sex appears to not increase overall. Many factors, however, influence the likelihood that safe sex will occur, including the prevailing structural environment and gender norms. These are discussed below.

**Influence of contextual factors on sexual behaviour**

Not surprisingly, social behaviours and the economic context remain important influences on sexual risk taking and shape the meanings of sexual relations for those receiving ART. Changes in sexual behaviour often occurred together with changes in other social behaviours, which participants linked to unsafe sex and multiple partnering, most notably use of alcohol. Additional lifestyle changes, apparently reinforced by receipt of ART and contact with related services, were smoking cessation, healthier eating habits and having a regular routine:

“I used to drink a lot, but not anymore. I even used to chew mira [khat, addictive herb], not anymore ...” (Kariuki, 39 years, unemployed)

While several respondents recounted having lengthy relationships of up to 20 years with their primary partners, new relationships were common after the death of a spouse, among both males and females interviewed. A longing for companionship, desire for remarriage and a need for financial support for childcare were common reasons motivating women to seek new partners. The latter motivation was frequently cited for new relationships both before and after ART. A widow, who later re-married and divorced, now has a boyfriend of unknown HIV-status and recounted the following:

“I had ‘friends’ to take care of my children. My [first] husband died in 1982 ... I just started ‘friendship’ with people just like that ... . I don’t know whether it was madness or something else? Because I see other women also, we had a way of doing things, we could just make
‘friendship’ with anyone without knowing their background as long as they helped.” (Agnes, 54 years, unemployed)

New relationships presented challenges with condom negotiation, as this male reported:

“... you see when you meet a person for the first time if you start discussing such details [condom use and safe sex] she would take you for a confused person ...” (Chale, 39 years, unemployed)

Sero-sorting, one strategy to overcome these difficulties, was mentioned:

“When I went for the Ambassadors of God [church group meetings], I met another friend who told me that he was positive and his wife had passed away ... he wanted us to meet [start a relationship] ... later I called him and told him his proposal [to start a relationship] had gone through.” (Jane, 28 years, unemployed)

Role of local beliefs and attitudes

While the beliefs and attitudes of those receiving ART often appeared to be somewhat distinct from those of the general population, participants indicated that overcoming common local beliefs required a deliberate rational process. Local clashes between moral, religious and cultural beliefs about condoms, on the one hand, and scientific evidence, on the other, provides one example of this. Although respondents justified condom use in the face of religious opposition, this conflict appeared to contribute to inconsistent condom use. A woman with an HIV-negative spouse, who reported using condoms inconsistently said:

“Christian ethics teach about in such and such dilemma you choose the less of the two [evils] ... I think, what is the point which is worse ... God will forgive us for that because I am doing it for a just cause. I am preventing him and protecting myself. My son needs us around ...” (Susan, 35 years, teacher)

In addition, notions about condom ineffectiveness remained prevalent among respondents and their partners. For example, a married male discounted the effectiveness of condoms saying:

“... honestly, I am not interested in them [condoms], I do not use them, neither will I start using them. I have unprotected sex with my wife and I ejaculate out of her ... the only thing that can prevent infection is [to avoid] promiscuity...” (Charo, 40 years, unemployed)

Aside from effects on sexual pleasure, several men and women reported that their partners complained that condoms could cause skin problems and other physical effects:
“Condoms affect all of us ... especially the man. It affects him a lot. It makes him itch a lot. He scratches himself until the skin almost comes off ...” (Grace, 38 years, housewife)

Another said:

“It reduces [pleasure] it makes the penis of a man become tight and small and he does not finish well.” (Jacinta, 36 years, housewife)

Still another respondent raised concerns about the oil-based lubricants on condoms:

“God himself created man to have sex flesh-to-flesh, now when you start wearing condoms, that oily stuff, I don't know what it is, it may even be chemical that can affect your penis and make it stop working.” (Charo, 40 years, unemployed)

Most had, however, gone through a process of rationalising the use of condoms as an essential part of their sexual life and had even learned to like them. One young woman said:

“These days we take condoms positively. Earlier, we used to see it like a problem having sex with a condom. These days if there is no condom, I stay without sex ... I do not feel like it.” (Jane, 28 years, unemployed)

Interestingly, several male respondents reported asking their partners to stop using family planning methods (pills, injections) after HIV diagnosis and treatment began. This appears to be based on a perception that hormonal contraceptives cause severe side-effects in people with HIV as reported by this woman with an HIV-positive partner:

“I was told by a person with AIDS ... [that] some of these family planning methods can cause cancer [and that] some other people who are not even HIV-positive can suffer from those cancers, and I think if I start using those drugs I will expose myself to those cancers ...” (Margret, 32 years, unemployed)

Another male respondent with an HIV-negative spouse said:

“The condom is good because you cannot affect the woman or the man; I see this as the safest way compared to other methods.” (Chale, 39 years, unemployed)

Intersection between condom use and cultural norms around fertility

Some participants use condoms for the purposes of both family planning and prevention of HIV transmission. They mostly reported consistent condom use and generally were not using other family planning methods. By contrast, others expressed a desire for children and this was an
important reason for not using condoms. This desire appears to supersede concerns about the risk of HIV transmission.

According to male respondents, their partners, both HIV-negative and -positive, expressed a strong desire for children, seemingly reflecting an internalized social norm about fertility and motherhood. One man said this about his HIV-negative spouse:

“She kept asking me how we would get a child if we keep on using condoms ... initially we agreed to use but later on she turned her back and says that I am mistreating her ... this puts me in a tricky situation ... sometimes I think that I should let her go out with other men ... . My wife sees no use of using a condom because she wants to have a baby.” (Gideon, 34 years, gardener)

Women, however, were also pressured by their partners to bear children as related by a widow with an HIV-positive live-in partner:

“He told me that he wanted a child because I do not have a child with him, the children I have are my late husband’s ... [I told him] I am taking strong medications and if I conceive now I may be badly affected, but he said that because I am taking [medications] there is no problem ... he doesn’t have another wife, so if I don’t want to have children he will marry another wife.” (Jacinta, 36 years, housewife)

As these findings show, underlying culturally-defined gender norms and expectations have a major influence on sexual behaviour. In the section that follows, we focus on how our respondents invoked local gender norms to make sense of and craft responses to their experiences of being HIV-positive and receiving ART.

**Gender roles and responsibilities in sexual relationships**

Respondents were asked where the burden of responsibility lay for protecting long-term partners from HIV. The consensus view was that responsibility lay with HIV-positive partners in discordant relationships and especially with men as they were the ones ‘to wear a condom’. Only a few felt that the HIV-negative partner bears some responsibility for protecting themself. Participants were generally less clear about responsibilities towards partners of unknown status.

A sense of being responsible for protection appears to contribute to a reduction in sexual performance and desire, adding to the effects loss of strength and fatigue associated with HIV disease. One man with a partner of unknown status said:
“[My sex life] has kind of slowed down … [sexual desire] it is back now, but there is that fear
[of infecting my partner], it does not come out of my mind.” (Saleh, 34 years, clerk)

Interestingly, those who have HIV-positive partners also feel responsible:

“I usually have the desire to have sex but it is not much … it is not like before … I don’t know
or maybe every time I want to have sex, I have to remember a condom.” (Khamis, 44 years,
unemployed)

Interestingly, women often took responsibility for ensuring male fidelity. Several women felt that
men ‘go out’ when they do not get sex at home. Among women there appeared to be a broad
acceptance that men will have multiple partners, as one divorced respondent cites:

“The wife is the one who has a long life [stays in a relationship] … the husband belongs to all
women.” (Julie, 45 years, housewife)

This view, women felt, reinforces the need for women to accept sex even when they do not want
to. This dynamic, depicted as a form of ‘protection’, here means protecting the man from himself
as illustrated by this widow:

“The wife should protect the husband, meaning she should satisfy the husband, if you protect
him in that way he won’t see the need of going out … .” (Njeri, 25 years, unemployed)

Female participants also sometimes took on the task of procuring condoms, as expressed by this
woman with an HIV-negative spouse:

“No day have I missed [using condoms]; when they get out [run out], I take them from here
[ART clinic], and if they get finished before my next appointment, I buy them from the shop.”
(Akinyi, 33 years, unemployed)

More traditional views about male and female roles were, however, also expressed. Here, men
framed this as the need to guide or protect women:

“It is the responsibility of the man to protect the woman … after counselling and discussing
with her she will be satisfied, because she is weak in mind and soul … it is believed as the man
you are the leader and driver of your partner.” (Mwaru, 40 years, unemployed)

These gendered notions of women as ‘weak in mind and soul’ and of the consequent need to
‘protect one’s wife’ also emerged in reference to disclosure. One man, despite having received an
HIV diagnosis five years ago and taking ART for a year, had not disclosed his status to his wife,
apparently to avoid harming her psychologically. Married for seven years, he described this as:
"... if I could be sure that she [wife] will [not] be affected psychologically ... I will disclose my status to her ... but [till now] I have been telling her to stop using injections for family planning [as] it will bring or cause problems ... it is better we use condoms [for family planning] so I use it without her consent." (Kimathi, 40 years, unemployed)

Even though most participants reported having one current partner, several women described themselves as co-wives (women in polygamous relationships). In many instances, they apparently were not aware of the existence of co-wives and children until late in the relationship, as co-wives lived in separate households, sometimes in other parts of the city or country:

"I am in the house thinking I am the only wife in the house, [when] a letter came from home. It was written by another wife; she had sent photographs of the children ..." (Jane, 28 years, unemployed)

Driven by underlying suspicion and fear of abandonment, these women found it difficult to discuss safe sex and condom use with their husbands and between them and other co-wives. A married woman said the following:

"he finds it hard to approach her [his other wife] about condoms. He worries that the wife will wonder why condoms this time since they have been living together and since they have children." (Atieno, 48 years, housewife)

Men reported being the main initiators of sex. Women concurred, adding that they never ask directly for sex, for fear of being perceived as a woman of loose morals or because they felt embarrassed. Women did, however, signal their sexual desires indirectly, as cited by a married woman:

"He is the one who has to start ... I cannot just tell him I want sex, he will wonder what kind of woman I am ... [laughter] ... [When I desire sex] I lie down, touch my feet and turn around in bed ... he then realizes that I will not let him sleep ..." (Grace, 38 years, housewife)

At the same time, some male respondents reported being pressured to have sex – as described by this male:

"my former wife would force me to have sex with her. I think she had more sexual urge than I did ... I think she was used to sleeping around with many men and she was used to doing this." (Saleh, 34 years, clerk)

To explore the feasibility of changes in sexual behaviour within stable relationships, such as where a partner could decline sex or insist on condom use, we enquired about local notions of
coercive sex within long-term relations. Most stated that sex with long-term partners was, by nature, consensual and could not be forced. Several women did report verbal coercion and threats from their partners to have sex, highlighting the prevailing gender and power dynamics among couples:

“... when I refused, he would ask me whether I knew I was in his house or did I not know that. I would tell him that I was aware of that but ask him whether this body was his or mine...” (Jane, 28 years, married, unemployed)

“... but sometimes he forces me. He asks me if I want him to go for sex outside marriage.” (Grace, 36 years, housewife)

We enquired further about forced sex and other forms of violence. Some men reported perpetrating violent sex, but only in the time prior to ART, often under the influence of alcohol and mostly with sex workers:

“... when I was a young boy, I go to a bar, find a woman, we agree on an amount of money to pay her, now she let me down by cutting short the sexual process and when I say I need more she refused ... now because of that and alcohol influence it made me to cause violence a bit.” (Mwaru, 40 years, unemployed)

Concerns that HIV-positive people may deliberately spread infection through unprotected sex often emerged. While respondents unanimously agreed that infecting someone deliberately is wrong, several did say they knew or had heard of persons who had intentionally engaged in unsafe sex with the objective of spreading HIV infection. The participants suggested several reasons for such behaviour such as anger, emotional distress and a desire for revenge, all conflated with a denial of HIV-infection:

“I knew of a person, and this person has since died. He was a teacher in a primary school... once he knew about his status he infected many unsuspecting school girls ...” (Gideon, 34 years, gardener)

**Discussion**

This study provides insight into changes in sexual behaviour that occur in HIV-infected people receiving ART and factors influencing this. The results concur with findings from a quantitative study in the same population (Luchters et al. 2008; Sarna et al. 2008a) and evidence elsewhere that found no overall increase in unsafe sex among persons receiving ART (Moatti et al. 2003;
Bateganya et al. 2005; Bunnell et al. 2006). Advanced HIV disease among participants in the study was associated with marked sexual dysfunction, especially among men, which was somewhat reversed as health improved with ART. Moderate increases in sexual function after ART initiation has also been noted in similar settings (Moatti et al. 2003). Importantly, some men reported that the above changes were accompanied by a reduction in sexual violence.

While the majority of respondents had one current partner, several women said that their husband had other partners in stable polygamous relationships. HIV testing and condom use were uncommon within these sexual networks. A detailed history of multiple partners and co-wives, a discussion of the risks associated with concurrent sexual partners and the importance of HIV testing and condom use with all partners are clearly critical components of prevention counselling in ART and other HIV programmes (Chersich and Rees 2008).

In this study, unprotected sex remains a critical issue, especially in stable relationships, many of which contain HIV discordant couples (Bunnell et al. 2006). The longitudinal cohort study in the same population found that among sexually-active participants, self-reported unprotected sex did decrease from 77% (82/107) in the 12 months prior to initiating ART to 63% in the 12 months after ART (67/107). Thirty of the 67 who had unprotected sex while receiving ART said this was with an HIV-negative or unknown status partner (Luchters et al. 2008).

In addition to religious and cultural barriers to condom use, misconceptions about the harmful effects of condoms hindered their use. High levels of knowledge, about condoms as well as other topics investigated here, are a necessary precursor to shift in attitudes and intentions and, ultimately, to behaviour change. The study findings, however, show once again that increased knowledge, even attitude change, in isolation does not necessarily directly impact on behaviour. Rather, much of the behaviour change reported here appeared to be underscored by high levels of perceived behaviour control, a central tenet of the theory of planned behaviour (Ajzen 1985). Though not a specific component of this theory, it is clear that sexual behaviours in the study population remains deeply embedded in their social and material circumstances and in their cultural and gendered contexts. Also, theories of behaviour change cannot be easily applied to circumstances of conflicting goals, such as fertility desires and protected sex.

Desires for fertility, expressed by men and women, often translated into unprotected sex. Findings among people receiving ART in Togo (Moore and Oppong 2007) and India (SriKrishnan et al. 2007) were similar, with men and women desiring children; whereas Kerrigan et al. (2006) report differently from Brazil, where males were often the predominant agent pushing their
partners to have children. Fertility desires must be respected and steps taken to promote safe conception and an HIV uninfected child, if desired (UNFPA and WHO 2006). Couples require information on the risk of transmission from mother to child, the importance of ART adherence during pregnancy and childbirth and assisted reproduction techniques, where available.

Although most often beneficial for participants and their relationships, disclosure by itself appears insufficient to guarantee protected sex. The process of disclosure and of identifying one’s infector has been shown elsewhere to lessen emotional reactions such as vengeance and increase ease in practising safer sex (Moskowitz and Roloff 2008). Mention of purposefully infecting others with HIV did occur here, echoing previous evidence of vengeance described in South Africa (Leclerc-Madlala 1997) and also in gay populations (Moskowitz and Roloff 2008).

In terms of the two major elements of sexual risk behaviour – multiple partners and low condom use – it is important to note that the main behaviour change that occurred was a reduction in concurrent partners. Both HIV testing and receipt of ART appear to be key life stages or transition points in the respondent’s lives, when they review and change their behaviour. Contact with health services at this time provides an important opportunity for intervention.

Short-term information, education and communication interventions could address misconceptions about condoms, but are unlikely to alleviate the more deep rooted psycho-social barriers reported. Longer term client- or couple-focused counselling could be used to identify, explore and address these barriers, most especially among discordant couples or where one has an unknown status. Programmes might consider using the experiences of individuals who overcame barriers to condom use to design behaviour change interventions and employ such persons as peer educators or expert patient trainers within ART programmes. The low condom use prior to their HIV diagnosis shows again the need to intensify programmes that promote condom use at community level.

Self-reported condom use in this study incurred both recall and social desirability biases (Allen et al. 2006), perhaps heightened among those receiving repeated counselling on condom use. Selection of participants based on self-reported condom use, with inclusion of both consistent and inconsistent users, may limit such bias.

In conclusion, the study suggests that there is a reduction in the number of sexual partners and, to a lesser extent, an increase in condom use around the time of HIV diagnosis and that these behaviour changes are facilitated by partner disclosure and further supported by ART
programmes and related interaction with health providers. Despite this, however, some patients continue to have unprotected sex and require additional support. Individualized risk-reduction interventions could possibly address the particular barriers that some individuals still face in effecting safe sex and improved sexual health.
References


Résumé

A Mombasa, au Kenya, des entretiens en profondeur ont été menés avec vingt-trois adultes sexuellement actifs recevant une thérapie antirétrovirale (TAR) afin de comprendre les changements des comportements sexuels après le début du traitement, et les facteurs influençant l’usage du préservatif. Veillant par ces personnes auparavant, l’infection à VIH a son stade avancé avait entraîné une baisse significative du désir sexuel et de la fonction sexuelle parmi elles. Suite au diagnostic de VIH, le nombre de partenaires sexuel(le)s s’est restreint et les relations monogames sont devenues prédominantes. La prise d’une thérapie antirétrovirale a renforcé ces changements, tout en améliorant la santé sexuelle. Cependant, les partenariats sexuels concomitants se poursuivent dans le cadre du mariage polygame, et des rapports sexuels non protégés ont lieu avec les partenaires réguliers, même celles qui sont séronégatives. Les personnes ayant utilisé des préservatifs de manière irrégulière avant de commencer leur traitement antirétroviral restent souvent des usager(e)s irrégulier(e)s par la suite. Alors que le dévoilement du statut sérologique semble avoir un impact favorable à l’usage du préservatif, il ne constitue pas toujours un facteur prédicatif des rapports sexuels protégés. En plus des perceptions classiques de l’impact du préservatif sur l’intimité et la confiance, les rois de genre traditionnels, les conceptions erronées sur la nocivité potentielle du préservatif et les de sirs de fertilité entravent l’usage du préservatif.
Article 6

5.2 Sexual risk behaviours of HIV positive persons not accessing HIV treatment in Mombasa, Kenya: Prevention with healthy positives in the community

Submitted to AIDS and Behaviour
Title: Sexual risk behaviours of HIV positive persons not accessing HIV treatment in Mombasa, Kenya: Prevention with healthy positives in the community

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Abstract:
PLHIV not receiving ART fall outside the ambit of prevention programs. Using modified snowball sampling, 698 PLHIV were recruited through Community Health Workers and Post Test Club Peers in Mombasa. Sexual behaviours were assessed using a cross sectional survey. Of the 60% sexually active PLHIV, 25% reported multiple sexual partners. Overall, unprotected sex was reported in 52% of sexual partnerships; notably with 32% of HIV negative partners and 54% partners of unknown HIV status. Multivariate analysis, after controlling for intra-client clustering, showed non-disclosure of HIV-status (AOR: 2.47, 95%CI: 1.53-3.99, p<0.001), experiencing moderate levels of perceived stigma (OR 3.00, 95% CI: 1.55-5.80; p<0.001), believing condoms reduce sexual pleasure (OR 2.99, 95% CI: 1.71-5.23; p<0.001) using a non-condom FP method (OR 5.48, 95% CI: 2.56-11.73; p<0.001) or not using any FP method (OR 4.17, 95% CI: 2.13-8.17; p<0.001) were independently associated with unsafe sex. High risk sexual behaviours are widely prevalent among PLHIV not accessing HIV treatment services.

Key words: PLHIV, prevention of sexual transmission of HIV, sexual behaviour, unsafe sex, Africa
**Introduction**

HIV transmission remains a significant global concern; in 2008 there were an estimated 1.9 million new infections globally. Sub-Saharan Africa remains the region most heavily affected by HIV. In 2008, sub-Saharan Africa accounted for 67% of HIV infections worldwide and a similar proportion of new HIV infections among adults.

Persons living with HIV (PLHIV) who receive antiretroviral therapy (ART) are in regular contact with health workers and thereby exposed to prevention messages and commodities. Indeed several studies have documented a reduction in sexual risk behaviours among PLHIV receiving ART after treatment. At the same time, studies have shown that PLHIV accessing HIV care services, but not receiving ART, while in contact with health workers and also exposed to prevention messages, have higher sexual risk behaviors and unprotected sex than those taking ART. A major gap, however, is evidence about the patterns of sexual behaviour among PLHIV in the community who are not receiving ART and are either accessing HIV care services infrequently or not at all and whose only contact with health services could well have been post-test counselling at the time of testing HIV positive.

Studies of the determinants of unprotected sex in HIV-infected people suggest that multiple factors operate individually or in an overlapping manner to influence sexual behaviour. Intention and self-efficacy regarding safe sex; dilemmas around disclosure of HIV status to partner(s) and fear of subsequent rejection; and motivation to protect partners as well as themselves against re-infection with a new HIV strain or another sexually transmitted infection play an important role in effecting safe sex. Partner attitudes and willingness to use condoms complicated by partner status and willingness to be tested for HIV add further dimensions to safe sex practices. Traditional gender attitudes and sexual power differentials continue to influence condom use and risk behaviors. Furthermore, fertility desires may lead to PLHIV ignoring the risks of unprotected sex. Most of the evidence about these determinants comes from studies with PLHIV accessing HIV treatment or care services (ART or regular routine follow-up of HIV disease including co-trimoxazole prophylaxis therapy). Little is known about whether these factors also influence sexual behaviour of PLHIV in the community, the ‘healthy positives’, who do not require or take ART and who do not visit health facilities or other care services. Moreover, it is possible that HIV-related stigma or denial form barriers for PLHIV to attending these services and similarly foster high risk behaviors.
In Kenya, in 2009, there were an estimated 1.3 to 1.6 million persons living with HIV and an estimated 70% (308,610 - 438,000) of PLHIV with advanced disease were receiving ART. Clearly a large number of PLHIV are not receiving treatment mostly because they do not have advanced HIV disease requiring treatment. Many of these PLHIV are outside the ambit of regular health care and prevention services. An estimated 100,000 new HIV infections occurred in 2009 in Kenya highlighting the need for prevention efforts to focus on sexual risk behaviors of PLHIV, including on those not accessing HIV care services. In this paper we examine the sexual risk behaviors of PLHIV in the community who were not receiving ART or co-trimoxazole prophylaxis.

Methods

Study participants were recruited for a cross-sectional survey, using modified snowball sampling, through Community Health Workers (CHW) and HIV-positive Peers from Post Test Clubs (PTC). Four CHWs from each of Mombasa’s four districts (n=16) were asked to recruit 20 PLHIV each. Five Peers from eight PTCs (n=40) across the city were each asked to recruit 12 PLHIV. HIV-positive adults who were 18 years or older and not currently taking ART and not accessing HIV care services were eligible to participate.

Recruitment followed a detailed protocol on approaching PLWA, maintaining confidentiality and verifying HIV-positive status. Each participant received Ksh 200 (USD 2.60) as compensation for their time and transport. CHWs and peer recruiters received Ksh 100 (USD 1.30) per participant recruited to cover their transport costs. Ethical approval was obtained from Kenyatta National Hospital’s Ethics Committee and Institutional Review Board of the Population Council. Written informed consent was obtained from all participants.

Data were collected using structured questionnaires administered in Swahili by trained research assistants. Demographic variables were categorized and time since diagnosis of HIV classified as less than 12 months, 12-24 months and ≥24 months ago. Contraception was categorized as: male/female condoms for contraception, other FP methods (IUD, hormonal methods, permanent methods, diaphragm, foam/jelly, or rhythm) and no contraception. Perceived stigma was assessed using an adapted Berger’s Stigma Scale (Cronbach’s alpha of adapted scale: 0.81) and was categorized as minimal or low (16-40), moderate (41-52) or high stigma (53-64). The recall reference period for sexual behaviour was the previous six months. Data were collected on sexual activity, lifetime number of sexual partners, number of sexual partners in the reference period, type of partners, partner’s HIV status and disclosure of own status to partners. A regular partner was defined as a spouse or cohabiting partner or a long-term friend with whom the
respondent has sex frequently. A casual partner was defined as a partner with whom the respondent was not living and had sex once or rarely. Commercial or transactional partners were those where money or gifts were exchanged for sex. To assess transmission concerns, participants were asked a binary question: “Are you worried about transmitting HIV to this partner?” Attitudes to condom use were assessed with two statements: “I am tired of always having to make sure that I use a condom every time I have sex” and “Using a condom takes away the romance from sex” – responses were marked as agree, disagree or don't know. STI events were self-reported episodes of genital discharge or genital ulcer in the past six months (laboratory confirmation was unavailable). Unprotected sex (UPS-6 months) was defined as inconsistent condom use with partners in the past 6 months. Unsafe sex (US), the primary outcome variable, was defined as inconsistent condom use with partners of HIV-negative or unknown status in the past six months (US-6 months). Participants were asked to report UPS for up to six partners in the past six months. UPS at last sex and US at last sex were also reported.

**Data Management and Statistical Analysis**

Data were entered into handheld computers (Dell Axim X 51) and then uploaded into Microsoft Access 2003 using Perseus 7.0.044 software. The data were analyzed on two levels (respondent-level and partner-level) using Intercooled Stata 8.0 (Stata Corporation, College Station, Texas, USA).

Respondent-level analysis compared demographic and behavioral characteristics of male and female participants. Unpaired Student’s t test and the Mann-Whitney U test were used for continuous variables with normal or non-normal distributions respectively, and a chi-square test used for categorical variables. Unadjusted Mantel Hanzel odds ratios were reported for behaviors.

Analysis at the level of sexual partner included data for up to six partners for each respondent in the last six months. Univariate logistic regression, controlling for clustering by ID of the respondent, was performed on each variable to identify associations between the variable and unsafe sex (US) at 6 months and last sex. Variables significant, at alpha level of 0.05, on univariate regression were included in the multivariate model. Also, a priori, disclosure of HIV status and type of partner were included in initial models, based on previous evidence. For multivariate analysis, logistic regression models controlled for clustering as there were multiple measures on the same participant, and each participant’s sexual behavior with one partner may not be independent from his or her behavior with other partners. A main effects model was
Although sex of the respondent was not associated with unsafe sex in univariate analysis, it was forced into the model as socio-demographic characteristics varied markedly between women and men (Table 1). Separate multivariate models were developed for US-6 months and US-last sex.

Results

Between May and August 2007, 720 PLHIV were interviewed out of 748 identified by CHWs and Peers; 28 persons were found ineligible as they were receiving ART or cotrimoxazole prophylaxis. Data from 22 participants were lost due to technical problems with the hand-held computers, leaving data on 698 participants. CHWs recruited 345 PLWA (mean 21.5 PLWA/CHW) and Peers from PTCs recruited 342 participants (mean 8.5 PLWA/Peer). For 11 participants data on source of recruitment was unavailable.

Median age of participants was 33.5 years (IQR=28-33). Twenty-three % of participants reported visiting HIV clinics off and on (ranging from once in three months to once every two years or more). Differences were detected in socio-demographic characteristics between male and female respondents [Table 1]. Women were more likely to be widowed (OR 3.40; 95%CI: 1.98-5.88; p<0.001); to attend HIV clinic (OR 1.73; 95%CI: 1.10-2.74; p=0.017) and be unemployed (OR 1.73; 95%CI: 1.10-2.71; p=0.018). Compared to men, women were less likely to drink alcohol each week (24.7% vs. 34.2%; OR: 0.63; 95%CI: 0.43 -0.93; p=0.017) or to report ever using drugs (21.7% vs. 63.4%; OR: 0.16; 95%CI: 0.11-0.24; p<0.001). Women knew their HIV status for longer periods than men. Participants recruited by CHWs and by Peers had a similar age, sex, education and employment status (data not shown).
Table 1: Characteristics of participating HIV+ adults not receiving ART, Mombasa, 2007

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total (n=698)</th>
<th>Males (n=164)</th>
<th>Females (n=534)</th>
<th>P a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: median (IQR)</td>
<td>33.5 (28-39)</td>
<td>34.5 (29-42)</td>
<td>33 (28-38)</td>
<td>0.02 b</td>
</tr>
<tr>
<td><strong>Highest education Level: % (n)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No education</td>
<td>7.3 (51)</td>
<td>3.7 (6)</td>
<td>8.4 (45)</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>59.2 (413)</td>
<td>54.9 (90)</td>
<td>60.5 (323)</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>31.1 (217)</td>
<td>38.4 (63)</td>
<td>28.8 (154)</td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>2.4 (17)</td>
<td>3.1 (5)</td>
<td>2.3 (12)</td>
<td>0.04</td>
</tr>
<tr>
<td><strong>Marital status: % (n)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married or cohabiting</td>
<td>34.4 (240)</td>
<td>40.9 (67)</td>
<td>32.4 (173)</td>
<td></td>
</tr>
<tr>
<td>Never married</td>
<td>21.1 (147)</td>
<td>32.9 (54)</td>
<td>17.4 (93)</td>
<td></td>
</tr>
<tr>
<td>Divorced, Separated,</td>
<td>20.4 (143)</td>
<td>15.8 (26)</td>
<td>21.9 (117)</td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>24.1 (168)</td>
<td>10.3 (17)</td>
<td>28.2 (151)</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Employment status: % (n)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>75.9 (530)</td>
<td>82.9 (136)</td>
<td>73.8 (394)</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Type of HIV testing facility used: % (n)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government health facility</td>
<td>80.7 (563)</td>
<td>77.4 (127)</td>
<td>81.7 (436)</td>
<td></td>
</tr>
<tr>
<td>Private medical centre</td>
<td>15.3 (107)</td>
<td>12.2 (20)</td>
<td>16.3 (87)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>4.0 (28)</td>
<td>10.4 (17)</td>
<td>2.1 (11)</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Time since diagnosis: % (n) b</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-11 months</td>
<td>43.1 (301)</td>
<td>50.0 (82)</td>
<td>41.0 (219)</td>
<td></td>
</tr>
<tr>
<td>12-23 months</td>
<td>19.5 (136)</td>
<td>22.6 (37)</td>
<td>18.5 (99)</td>
<td></td>
</tr>
<tr>
<td>24+ months</td>
<td>33.4 (233)</td>
<td>23.2 (38)</td>
<td>36.5 (195)</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Attends HIV clinic: % (n)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>23.4 (163)</td>
<td>16.5 (27)</td>
<td>25.5 (136)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>76.7 (535)</td>
<td>83.5 (137)</td>
<td>74.5 (398)</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Perceived level of stigma: % (n)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>16.2 (113)</td>
<td>18.9 (31)</td>
<td>15.4 (82)</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>68.8 (480)</td>
<td>67.7 (111)</td>
<td>69.1 (369)</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>15.0 (105)</td>
<td>13.4 (22)</td>
<td>15.5 (83)</td>
<td>0.5</td>
</tr>
<tr>
<td><strong>Drink alcohol weekly: % (n)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>26.9 (188)</td>
<td>34.2 (56)</td>
<td>24.7 (132)</td>
<td>0.02</td>
</tr>
<tr>
<td>Has ever used drugs: % (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>31.5 (220)</td>
<td>68.5 (104)</td>
<td>21.7 (116)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

a X² test unless indicated.

b Mann-Whitney U test.

n=671; 28 respondents did not know their time since diagnosis.

ART: antiretroviral therapy; IQR: interquartile range

Sexual Behavior

Male participants reported significantly higher median life time partners than females (14 (IQR=6-25) vs. 4 (IQR 3, 8); p<0.001). In the six-months preceding the survey, 59.2 % of participants were sexually active; similar among males and females [Table 2]. Male participants were more likely to report multiple partners (≥2 partners) than female participants (OR: 3.67; 95% CI 2.18-6.18; p<0.001). Overall 16 sexually active participants (5 males and 11 females) reported more than 6 partners. Twenty % of male respondents (MR) reported a mix of sexual partners (regular/casual/transactional) as against 9.7% female respondents (FR) (OR: 2.33; 95% CI=1.23-
4.43; p<0.01). [Table 2] While the majority of male (84.4%) and female participants (98.8%) reported heterosexual partners, 15.5% of males (n=14) and 1.2% of females (n=4) reported same sex partners in the past six months [Table 2]. Over a quarter (26.8%) of sexual partners reported by sexually active men were males (n=48 male partners).

Partner characteristics
Sexually active respondents reported a total of 616 sex-partners over the reference period [Table 2]; a mean of 1.98 partners per sexually active man and 1.36 per sexually active woman. Female participants reported more regular partners compared to male participants (72.1 % vs. 50.8%; OR: 2.50; CI: 1.73-3.61; p<0.001) while male participants reported a higher proportion of casual (23.5% vs. 19.7%; OR: 1.25; CI: 0.82-1.90; p=0.29) and transactional partners (25.7% vs. 8.2%; OR: 3.85; CI: 2.35-6.30; p=<0.001) compared to women (p<0.001) [Table 2]. Three quarters of all partners were of unknown HIV status, similar for men and women. Disclosure of HIV status was made to a third of all partners (MR: 30.2% vs. FR: 39.8%; OR: 1.53; CI: 1.09-2.47; p=0.02).
Table 2: Sexual behavior among HIV+ adults not receiving ART in Mombasa, Kenya 2007

<table>
<thead>
<tr>
<th></th>
<th>All Respondents</th>
<th>Males (n=164)</th>
<th>Females (n=534)</th>
<th>P Value(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifetime no. of partners:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>median (IQR)(^b)</td>
<td>5 (3,10)</td>
<td>14 (6,25)</td>
<td>4 (3,8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sexually active in past 6 months: % (n)</td>
<td>59.2 (413)</td>
<td>55.5 (91)</td>
<td>60.3 (322)</td>
<td>0.27</td>
</tr>
</tbody>
</table>

Sexually Active Respondents

<table>
<thead>
<tr>
<th></th>
<th>Total (n=410(^c))</th>
<th>Male (n=90)</th>
<th>Females (n=320)</th>
<th>P Value(^e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of partners in past 6 months: % (n)(^d)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One partner</td>
<td>75.5 (308)</td>
<td>54.4 (49)</td>
<td>81.5 (259)</td>
<td></td>
</tr>
<tr>
<td>More than one partner</td>
<td>24.5 (100)</td>
<td>45.6 (41)</td>
<td>18.6 (59)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sex of partner: % (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only male</td>
<td>79.8 (327)</td>
<td>12.2 (11)</td>
<td>98.8 (316)</td>
<td></td>
</tr>
<tr>
<td>Only female</td>
<td>18.8 (77)</td>
<td>84.4 (76)</td>
<td>0.3 (1)</td>
<td></td>
</tr>
<tr>
<td>Both male &amp; female</td>
<td>1.5 (6)</td>
<td>3.3 (3)</td>
<td>0.9 (3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Type of partner: % (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only regular</td>
<td>76.3 (313)</td>
<td>62.2 (56)</td>
<td>80.3 (257)</td>
<td></td>
</tr>
<tr>
<td>Only casual</td>
<td>8.5 (35)</td>
<td>11.1 (10)</td>
<td>7.8 (25)</td>
<td></td>
</tr>
<tr>
<td>Only sex workers</td>
<td>3.2 (13)</td>
<td>6.7 (6)</td>
<td>2.2 (7)</td>
<td></td>
</tr>
<tr>
<td>Multiple types</td>
<td>12.0 (49)</td>
<td>20.0 (18)</td>
<td>9.7 (31)</td>
<td>0.002</td>
</tr>
</tbody>
</table>

Sexually Active Respondents (partner level analysis: n=616)

<table>
<thead>
<tr>
<th></th>
<th>All respondents (n=410)</th>
<th>Males respondents (n=90)</th>
<th>Female respondents (n=320)</th>
<th>P Value(^e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex of partner: % (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>78.1 (481)</td>
<td>26.8 (48)</td>
<td>99.1 (433)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female</td>
<td>21.9 (135)</td>
<td>73.2 (131)</td>
<td>0.9 (4)</td>
<td></td>
</tr>
<tr>
<td>Type of partner: % (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular</td>
<td>65.9 (406)</td>
<td>50.8 (91)</td>
<td>72.1 (315)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Casual</td>
<td>20.8 (128)</td>
<td>23.5 (42)</td>
<td>19.7 (86)</td>
<td></td>
</tr>
<tr>
<td>Sex worker</td>
<td>13.3 (82)</td>
<td>25.7 (46)</td>
<td>8.2 (36)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Partner HIV status: % (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>15.3 (94)</td>
<td>17.3 (31)</td>
<td>14.4 (63)</td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>10.2 (63)</td>
<td>9.5 (17)</td>
<td>10.5 (46)</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>74.5 (459)</td>
<td>73.2 (131)</td>
<td>75.1 (328)</td>
<td>0.64</td>
</tr>
<tr>
<td>Disclosure: % (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner knows</td>
<td>37.0 (228)</td>
<td>30.2 (54)</td>
<td>39.8 (174)</td>
<td>0.02</td>
</tr>
<tr>
<td>Partner does not know</td>
<td>63.0 (388)</td>
<td>69.8 (125)</td>
<td>60.2 (263)</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) X² test unless indicated  
\(^b\) n=684; 14 respondents were excluded if they did not know, did not respond, or reported ≥ 800 partners  
\(^c\) n=410; 3 sexually active respondents did not answer further questions about their sexual partners  
\(^d\) n=408; 2 respondents did not respond  
\(^e\) Fisher’s exact test  
ART, antiretroviral therapy; IQR, interquartile ran

**Fertility intentions and family planning:**

Overall, 82% of respondents had children from past or current relationships, and 74.8% did not want any more children. However, 67.3% of respondents were not using any form of contraception. Among those respondents who did not want children, 54.8% (286/522) were not using any contraception.
**Other sexual practices**

Twenty-nine % (24 males and 94 females,) of sexually active respondents reported sexual intercourse with a partner during menstruation. Of those, 78 % (18 males and 74 females) inconsistently or never used condoms during menstrual periods. Eighteen % of sexually active respondents (23 males and 50 females) reported ever having anal sex. Of those, 80.8% (14 males and 45 females) inconsistently or never used condoms during anal sex. Twenty-eight % of sexually active respondents (33 males and 83 females) reported ever having oral sex. Of those 87 % (27 males and 74 females) inconsistently or never used condoms during oral sex. (Data not shown)

**Table 3: Prevalence of Unprotected Sex (UPS) in the Past 6 months and at Last Sex among HIV+ Sexually Active Participants not Receiving ART in Mombasa, Kenya, 2007 (partner level analysis n=616)**

<table>
<thead>
<tr>
<th></th>
<th>Past 6 months</th>
<th></th>
<th>At last sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>Respondents</td>
<td>Respondents</td>
<td>Respondents</td>
</tr>
<tr>
<td></td>
<td>(n=90)</td>
<td>(n=320)</td>
<td>(n=90)</td>
</tr>
<tr>
<td>Total Unprotected Sex: % (n)</td>
<td>44.1 (79/179)</td>
<td>55.2 (241/437)</td>
<td>40.2 (72/179)</td>
</tr>
<tr>
<td>By sex of partner: % (n)</td>
<td>22.9 (11/48)</td>
<td>55.7 (241/433)</td>
<td>20.8 (10/48)</td>
</tr>
<tr>
<td>Male</td>
<td>p = 0.001</td>
<td></td>
<td>p = 0.04*</td>
</tr>
<tr>
<td>Female</td>
<td>52.0 (68/131)</td>
<td>0 (0/4)</td>
<td>47.3 (62/131)</td>
</tr>
<tr>
<td>By type of partner: % (n)</td>
<td>59.3 (54/91)</td>
<td>61.6 (194/315)</td>
<td>52.8 (48/91)</td>
</tr>
<tr>
<td>Regular</td>
<td>p &lt; 0.001</td>
<td></td>
<td>p = 0.001</td>
</tr>
<tr>
<td>Casual</td>
<td>26.2 (11/42)</td>
<td>38.4 (33/86)</td>
<td>26.2 (11/42)</td>
</tr>
<tr>
<td>Sex worker</td>
<td>30.4 (14/46)</td>
<td>38.9 (14/36)</td>
<td>28.3 (13/46)</td>
</tr>
<tr>
<td>By partner status: % (n)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>45.2 (14/31)</td>
<td>61.9 (39/63)</td>
<td>38.7 (12/31)</td>
</tr>
<tr>
<td>Negative</td>
<td>35.3 (6/17)</td>
<td>30.4 (14/46)</td>
<td>23.5 (4/17)</td>
</tr>
<tr>
<td>Unknown</td>
<td>45.0 (59/131)</td>
<td>57.3 (188/328)</td>
<td>42.8 (56/131)</td>
</tr>
<tr>
<td>By disclosure: % (n)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner knows</td>
<td>38.9 (21/54)</td>
<td>57.5 (100/174)</td>
<td>31.5 (17/54)</td>
</tr>
<tr>
<td>Partner does not know</td>
<td>46.4 (58/125)</td>
<td>53.6 (141/263)</td>
<td>44.0 (55/125)</td>
</tr>
</tbody>
</table>

\(^{a}\)X\(^{2}\) test unless indicated

\(^{b}\)Fisher’s exact test

**Sexually transmitted infections:**

Overall, 44 % of participants reported ever having a STI other than HIV. Males were significantly more likely to ever report a STI compared to female respondents (55.9% vs. 41.0%; OR: 1.82,
95% CI: 1.27-2.61; p<0.001). Of those who ever reported a STI, half (49.5%) reported having a
STI in the last six months. A higher proportion of female respondents reported genital discharge
(42.9% vs. 19.7%, OR: 3.06; 95%CI: 1.68-5.55; p<0.001) and genital ulcers (38.2% vs. 25.5%;
OR: 1.80; 95% CI: 1.04-3.11; p=0.046) in the last six months compared to men. Of note, 46.5%
informed their regular partners of their infection, but only 13.9% of those with multiple partners
informed other partners.

**Prevalence of unprotected sex**

UPS-6 months was reported in over half (52%) the sexual partnerships, more by women than men
(55.2% vs. 44.1%; OR: 1.56; CI: 1.09-2.21; p=0.01) [Table 3]. Male respondents were more
likely to report UPS-6 months with female partners compared to male partners (52% vs. 22.9%;
OR: 3.63; CI: 1.66-7.95; p 0.001). At the same time, male respondents reported UPS-6 months
with almost a quarter (22.9%, 11/48) of their male partners. Both sexes were more likely to have
UPS-6 months with regular partners compared to casual or transactional partners (p<0.001).
UPS-6 months was reported with almost a third of HIV-negative partners (MR: 35.3% vs. FR:
30.4%; OR: 0.80; CI: 0.25-2.63; p=0.72) and with half of the partners of unknown HIV status
(MR: 45.0% vs. FR: 57.3%; OR: 1.64; CI: 1.07-2.47; p=0.02) by both male and female
respondents. There was no difference noted in reporting UPS-6 months with respect to disclosure
(Table 3). UPS-last sex was reported similar to UPS-6 months (Table 3)
Table 4: Factors associated with Unsafe Sex in the Past 6 months (US-6 months) and at last sex (US-last sex) among HIV+ Sexually Active Participants not Receiving ART, Mombasa, Kenya, 2007, Adjusted for Intra-client Clustering (partner level analysis n=616)

<table>
<thead>
<tr>
<th>Variable</th>
<th>US-6 months</th>
<th></th>
<th>US-Last Sex</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pres. % (n)</td>
<td>Crude Odds (95% CI)</td>
<td>P value</td>
<td>Adjusted Odds (95% CI)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Sex of respondent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (n=179)</td>
<td>36.3 (65)</td>
<td>1.0</td>
<td>---</td>
<td>1.0</td>
</tr>
<tr>
<td>Female (n=437)</td>
<td>46.2 (202)</td>
<td>1.51 (0.88-2.59)</td>
<td>0.14</td>
<td>1.96 (1.07-3.57)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-24 years (n=106)</td>
<td>42.5 (45)</td>
<td>0.85 (0.44-1.65)</td>
<td>0.64</td>
<td>---</td>
</tr>
<tr>
<td>25-34 years (n=291)</td>
<td>46.4 (135)</td>
<td>1.0</td>
<td>---</td>
<td>43.0 (125)</td>
</tr>
<tr>
<td>35-44 years (n=184)</td>
<td>39.7 (73)</td>
<td>0.76 (0.46-1.26)</td>
<td>0.29</td>
<td>33.2 (61)</td>
</tr>
<tr>
<td>45+ (n=35)</td>
<td>40.0 (14)</td>
<td>0.77 (0.31-1.94)</td>
<td>0.58</td>
<td>34.3 (12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Marital status*</td>
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</tr>
<tr>
<td>Married or cohabiting (n=232)</td>
<td>44.8 (104)</td>
<td>1.0</td>
<td>---</td>
<td>41.0 (95)</td>
</tr>
<tr>
<td>Never married (n=184)</td>
<td>41.3 (76)</td>
<td>0.87 (0.49-1.51)</td>
<td>0.61</td>
<td>35.9 (66)</td>
</tr>
<tr>
<td>Divorced, separated, or widowed (n=200)</td>
<td>43.5 (87)</td>
<td>0.95 (0.59-1.53)</td>
<td>0.83</td>
<td>39.0 (78)</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>Highest education level completed</td>
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<tr>
<td>No education (n=42)</td>
<td>52.4 (22)</td>
<td>1.32 (0.53-3.26)</td>
<td>0.55</td>
<td>52.4 (22)</td>
</tr>
<tr>
<td>Primary (n=378)</td>
<td>45.5 (172)</td>
<td>1.0</td>
<td>---</td>
<td>42.6 (161)</td>
</tr>
<tr>
<td>Secondary (n=179)</td>
<td>39.1 (70)</td>
<td>0.77 (0.47-1.26)</td>
<td>0.30</td>
<td>31.8 (57)</td>
</tr>
<tr>
<td>University (n=17)</td>
<td>17.7 (3)</td>
<td>0.26 (0.07-0.98)</td>
<td>0.05</td>
<td>17.7 (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Sex of partner*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (n=481)</td>
<td>44.3 (213)</td>
<td>1.0</td>
<td>---</td>
<td>39.3 (189)</td>
</tr>
<tr>
<td>Female (n=135)</td>
<td>40.0 (54)</td>
<td>0.84 (0.49-1.42)</td>
<td>0.52</td>
<td>37.0 (50)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Type of partner*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular (n=406)</td>
<td>48.3 (196)</td>
<td>1.80 (0.88-3.68)</td>
<td>0.11</td>
<td>42.4 (172)</td>
</tr>
<tr>
<td>Casual (n=128)</td>
<td>33.6 (43)</td>
<td>0.98 (0.41-2.32)</td>
<td>0.96</td>
<td>32.8 (42)</td>
</tr>
<tr>
<td>Sex worker (n=82)</td>
<td>34.2 (28)</td>
<td>1.0</td>
<td>---</td>
<td>30.5 (25)</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Time since diagnosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 12 months (n=265)</td>
<td>52.8 (140)</td>
<td>1.0</td>
<td>---</td>
<td>52.8 (140)</td>
</tr>
<tr>
<td>12-24 months (n=131)</td>
<td>37.4 (49)</td>
<td>0.53 (0.30-0.94)</td>
<td>0.03</td>
<td>37.4 (49)</td>
</tr>
<tr>
<td>≥24 months (n=197)</td>
<td>35.0 (69)</td>
<td>0.48 (0.28-0.82)</td>
<td>0.01</td>
<td>30.1 (61)</td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Disclosure to partner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (n=228)</td>
<td>31.1 (71)</td>
<td>1.0</td>
<td>---</td>
<td>31.1 (71)</td>
</tr>
<tr>
<td>No (n=388)</td>
<td>50.5 (196)</td>
<td>2.26 (1.52-3.35)</td>
<td>&lt;0.001</td>
<td>45.9 (178)</td>
</tr>
<tr>
<td>Transmission concerns*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Yes (n=394)</td>
<td>43.7 (172)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>No (n=222)</td>
<td>42.8 (95)</td>
<td>0.97 (0.63-1.49)</td>
<td>0.87</td>
<td>---</td>
</tr>
<tr>
<td>38.3 (151)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>39.6 (88)</td>
<td>1.06 (0.69-1.62)</td>
<td>0.80</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Had STI in past 6 months*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (n=145)</td>
<td>42.8 (62)</td>
<td>0.97 (0.58-1.63)</td>
<td>0.91</td>
<td>---</td>
</tr>
<tr>
<td>No (n=471)</td>
<td>43.5 (202)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>40.0 (58)</td>
<td>1.06 (0.65-1.76)</td>
<td>0.80</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Perceived internalized stigma</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimal/Low (n=98)</td>
<td>17.4 (17)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Moderate (n=431)</td>
<td>46.9 (202)</td>
<td>4.20 (2.22-7.95)</td>
<td>&lt; 0.001</td>
<td>3.00 (1.55-5.80)</td>
</tr>
<tr>
<td>High (n=87)</td>
<td>55.2 (48)</td>
<td>5.86 (2.60-13.21)</td>
<td>&lt; 0.001</td>
<td>2.04 (0.80-5.23)</td>
</tr>
<tr>
<td>41.5 (179)</td>
<td>3.38 (1.84-6.22)</td>
<td>&lt; 0.001</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>49.4 (43)</td>
<td>4.66 (2.20-9.86)</td>
<td>&lt; 0.001</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Tired of using condoms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree (n=253)</td>
<td>49.8 (126)</td>
<td>1.99 (1.26-3.14)</td>
<td>0.003</td>
<td>1.41 (0.84-2.37)</td>
</tr>
<tr>
<td>Disagree (n=319)</td>
<td>33.2 (106)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Do not know(n=44)</td>
<td>79.6 (35)</td>
<td>7.81 (3.31-18.43)</td>
<td>&lt; 0.001</td>
<td>4.88 (1.82-13.09)</td>
</tr>
<tr>
<td>45.5 (115)</td>
<td>2.12 (1.36-3.30)</td>
<td>0.001</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>77.3 (34)</td>
<td>20.02</td>
<td>&lt; 0.001</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>5.64 (2.22-14.34)</td>
<td>&lt; 0.001</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Believe condom reduces pleasure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agree (n=369)</td>
<td>51.0 (188)</td>
<td>2.87 (1.81-4.54)</td>
<td>&lt; 0.001</td>
<td>2.99 (1.71-5.23)</td>
</tr>
<tr>
<td>Disagree (n=222)</td>
<td>26.6 (59)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Ambivalent (n=25)</td>
<td>80.0 (20)</td>
<td>11.1 (4.03-30.28)</td>
<td>&lt; 0.001</td>
<td>9.19 (2.70-31.19)</td>
</tr>
<tr>
<td>24.8 (55)</td>
<td>2.46 (1.57-3.83)</td>
<td>&lt; 0.001</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>44.7 (165)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>76.0 (19)</td>
<td>24.84</td>
<td>&lt; 0.001</td>
<td>---</td>
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</tr>
<tr>
<td>7.51 (2.27-24.79)</td>
<td>&lt; 0.001</td>
<td>---</td>
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</tr>
<tr>
<td>Family planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using condom (n=124)</td>
<td>16.1 (20)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Using other method (n=117)</td>
<td>53.0 (62)</td>
<td>5.9 (2.87-11.96)</td>
<td>&lt; 0.001</td>
<td>5.48 (2.56-11.73)</td>
</tr>
<tr>
<td>No family planning (n=375)</td>
<td>49.3 (185)</td>
<td>5.06 (2.72-9.42)</td>
<td>&lt; 0.001</td>
<td>4.17 (2.13-8.17)</td>
</tr>
<tr>
<td>41.4 (104)</td>
<td>1.21 (0.78-1.87)</td>
<td>0.40</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Drink Alcohol Weekly*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (n=251)</td>
<td>46.6 (117)</td>
<td>1.25 (0.79-1.97)</td>
<td>0.34</td>
<td>---</td>
</tr>
<tr>
<td>No (n=365)</td>
<td>41.1 (150)</td>
<td>1.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>37.0 (135)</td>
<td>1.0</td>
<td>---</td>
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</table>

ART, antiretroviral therapy; CI, confidence interval; STI, sexually transmitted infection
Unprotected sex with HIV negative or unknown status person (US)

Risk factors associated with US-6 months were explored (Table 4). In univariate analysis, university level of education, more than 12 months since HIV diagnosis, non-disclosure of HIV status, moderate and high levels of internalized stigma, condom use fatigue, believing that condoms reduce pleasure and using non-condom family planning methods were associated with higher risk of US-6 months and were included in the model.

On multivariate analysis, after controlling for intra-client clustering, non-disclosure of HIV-status to a partner (AOR 2.47, 95% CI: 1.53-3.99; p<0.001), experiencing moderate levels of perceived stigma (OR 3.00, 95% CI: 1.55-5.80; p<0.001), believing condoms reduce sexual pleasure (OR 2.99, 95% CI: 1.71-5.23; p<0.001) or being unsure about condoms reducing pleasure (OR 9.19, 95% CI: 2.70-31.19; p<0.001), using a non-condom FP method (OR 5.48, 95% CI: 2.56-11.73; p<0.001) or not using any FP method (OR 4.17, 95% CI: 2.13-8.17; p<0.001) were independently associated with US-6 months. Sex of the respondent, though not significantly associated on univariate analysis, was associated with US-6 months on multivariate analysis: female respondents were nearly two times more likely to report US-6 months (OR 1.96, 95% CI: (1.07-3.57); p<0.03) compared to male respondents. University education and time since HIV diagnosis were not associated with US-6 months. Predictors for US-last sex were similar to those for US-6 months.

Discussion:

Despite an overall reduction in the rate of new HIV infections in sub-Saharan Africa in the past year, widespread concern remains about the continuing transmission of HIV in the population. This study, conducted among PLHIV in the coastal community of Mombasa, show high rates of unsafe sex in this population. Almost sixty % of the participants recruited were sexually active in the past six months. This proportion is significantly higher than what we reported in an earlier study conducted in Mombasa among PLHIV receiving ART (44%) and PLHIV receiving co-trimoxazole prophylaxis, but not ART (47%); and also higher than that documented by other studies among PLHIV accessing care services in Uganda (48%), Cameroon (47%), and Cote d’Ivoire (47%). Unprotected sex was reported with over half the sexual partners; significantly higher with regular partners than with non-regular partners. This is much higher than that reported from a cohort of ART-naïve PLHIV in Uganda. Of concern is the fact that unprotected sex was reported with a third of HIV-negative partners and half the untested partners (unknown HIV status); similar concerns have been raised previously. Three quarter of all sexual partners were of
unknown HIV status amplifying the risk of HIV transmission. Prevention programs need to expand their efforts to reach PLHIV in the community who fall outside routine HIV care services.

The study provides evidence that prevention programs can reach PLHIV in the community, who are not accessing routine HIV care services, through community health workers. All participants reached and recruited into this study were neither receiving ART nor co-trimoxazole prophylaxis and 77% of the participants were not accessing any HIV care and support services at all. The study was also able to reach PLHIV who had been tested positive more than 12 months previously (57%) and therefore, presumably, more likely to have forgotten any prevention messaging at the time of post-test counselling.

Disclosure of HIV status to partners and perceived stigma emerged as independent determinants of safe sex behaviors. It is important to note the intersection of the two determinants where PLHIV are reluctant to disclose for fear of rejection (perceived stigma) which may or may not happen. Other studies have reported similar findings among PLHIV accessing care services. This study also highlights the role that beliefs about condoms reducing pleasure and condom use fatigue play in influencing safe sex. Prevention programs need to develop better strategies to change attitudes and beliefs about condom use in this high risk population. High levels of unmet family planning needs were observed in this population: more than half of the participants who did not want to have children were not using contraception. Using a non-condom family planning method or not using any family planning was also associated with higher risk of unsafe sex. Although widely discussed, effective integration of family planning counseling and services into HIV prevention programs is not taking place and merits urgent action.

We documented risky sexual practices such as unprotected sex during menstruation, unprotected MSM and heterosexual anal sex and unprotected oral sex. Sexual exposure to genital blood during menstruation is prevalent but not documented frequently; the practice can facilitate transmission of HIV and other STIs. This study also found substantial same sex behaviors among male participants in the community (16%) and almost a quarter of all sexual partners reported by male participants were male. Mombasa is known for the presence of male sex workers and unprotected anal sex is frequently reported in this population. Anal intercourse is reported relatively less frequently than unprotected vaginal intercourse among heterosexual individuals. The low prevalence of anal intercourse among heterosexual individuals may be offset by its greater efficiency for transmitting HIV. HIV programs needs to specifically discuss these forms of risky sexual behaviors during prevention counselling.
The study is not without limitations. We recruited participants using modified snowball sampling. Although our sample is not a random representative sample, this sampling technique did however allow us to (i) reach PLHIV within the community who are otherwise not accessible and (ii) limit the level to which CHWs and PTC Peers could recruit from within their networks. We believe we were able to recruit a sufficiently diverse sample of participants for this study. For the partner level analysis we limited the number of partners each participant could describe to a maximum of six in the reference period; this afforded us the ability to obtain more reliable recall and limit the influence of the outliers in the sample. The study relies on self-reported sexual risk and condom use behaviors which may be subject to social desirability and recall bias. Reviews of validity and reliability of HIV research have found that sexual behavior data are fairly consistent and self-reported data on sexual acts reasonably congruent especially for infrequent acts and short recall periods.\textsuperscript{37,38} However, recent studies using biomarkers to validate self-reported condom use suggest the over reporting of condom use and recommend interpreting self-reported behaviours with caution.\textsuperscript{39} This only serves to raise the level of risk that we are reporting in this study. The sexual risk behaviors reported here follow the trend reported by PLHIV accessing care services.

In conclusion, high risk sexual behaviors are widely prevalent among PLHIV in the community who are not accessing ART or other HIV care services. It is possible to reach these persons in the community and HIV programs need to bring this population into the ambit of prevention programs.
References:


6. DISCUSSION
6.1 Discussion on Research Findings

The studies presented here investigated determinants of sexual and reproductive health and HIV risks among key vulnerable populations in Kenya, and recommend specific prevention strategies. In particular, the studies assessed factors associated with SRH and HIV risks among FSW and MSW but also underlined the role of HIV positive persons in the dynamics of the HIV epidemic. In addition, we assessed the safety and acceptability of the diaphragm as a potential female-controlled barrier method of preventing sexually transmitted infections and pregnancy.

Female sex workers

The key aim in Chapter 4.1 is to understand the meanings and circumstances of violence in the working lives of FSWs. Available data show that sex work in Kenya, as elsewhere, is characterized by high levels of violence [1-3]. Typically most of the street-based FSWs sex workers are at high risk for assault, rape, and other forms of physical violence from a variety of sources. However most of the violence experienced by FSWs comes from their clients and law enforcement agents [3, 4]. Almost all women we interviewed had been physically or sexually assaulted. This finding mirrors previous research in Mombasa that found that two out every three FSWs had experienced at least one form of sexual violence including being forced to have sex without a condom, and nearly three in every five reported to have been beaten or verbally abused as a result of engaging in commercial sex [5]. By and large, sex workers are viewed as easy targets for sexual and gender-based violence because they are perceived by their victimizers to be largely outside of the protection of the legal system [6, 7]. Whenever abused, female sex workers rarely report perpetrators; most feel they have no recourse to address the situation. As a result many women are denied a claim to their individual human rights under the current operating laws and framework. Under the existing circumstances, many women seek to work underground and operate outside the protection of law and health services. The pervasive violence experienced by sex workers also means that sexual negotiation and a right to safer sex is barely achieved. Clients determine when, how and with what protection, if any, to have sex. Occasionally women opted for unsafe sex in order to gain financially, but in many instances clients vigorously and often times violently resisted condom use or, indeed, even payment for sexual service. The results of this this study compliments existing literature that demonstrate that sex workers face heightened vulnerabilities and lack personal or social status to negotiate safer sex, being under the constant threat of violence or loss of income [4-7].
Further, revelations by study participants also exemplify deeply-rooted notions of masculinity, supported by gender hierarchies and sexual entitlement of men. It appears commoditization of sex, a private act, in the public realm challenges acceptable mores of sexual behavior and is likely a trigger of violence [6]. These scenarios take variable expression among the general population and explain, at least in part, why women bear the brunt of HIV infection in sub-Saharan Africa.

In relation to sex workers' experiences of violence, we explored the subjective experiences of specific groups of women who had used the diaphragm (chapter 4.2). It is anticipated that female-controlled technologies such as diaphragm may have potential to reduce women's biological susceptibility and assist in counteracting socio-cultural vulnerability to HIV. Our study findings show that the diaphragm was perceived as useful in relationships in which there are stark gender inequalities barring women from negotiating safer sex. In addition, a number of respondents also regarded the diaphragm as a way of increasing sexual intimacy and liberating sexuality from the constraints of condoms resonating similar studies [8-9]. These assertions were made even after women were taken through intensive counseling about the uncertain protective value of the diaphragm against some STIs. Besides, as compared to other studies, men and women in our study were unanimous that condoms are undesirable and hinders sexual pleasure [10-12]. This fact may determine the extent to which condoms are acceptable and whether they will be used consistently and correctly, especially in the 'heat of the moment' [13,14]. As previously shown, methods that are highly coital dependent are more likely to be used inconsistently. Recently developed cervical barriers can be worn up to 72 hours, allowing for near continuous use. Increases in time when the diaphragm can remain in situ may accentuate use if proved effective against sexually transmitted infections. The findings of this diaphragm acceptability study add information (including challenges) about the actual behaviors of women and men and the impediments to diaphragm use. It also cautions that continuous use in the long run maybe dependent on relationship type or gender-power distribution. By and large, development of technologies such as vaginal microbicides and cervical barriers that are under the control of women can augment existing barrier methods (female and male condoms) as they are still the most effective individual-level method of protection [15].

In chapter 4.3 we assess the unmet contraceptive need among female sex workers in two urban areas in Kenya. Addressing female sex workers' contraceptive needs is essential given their high risk of unintended pregnancy stemming from frequent unprotected sex with multiple partners. Our data suggest that unmet need for contraception was very low (3.8%), but further analysis revealed low level of unmet need arises from high levels of self-reported use of male condoms. Revised
calculation gives a potential unmet need of 13.6% almost four times the unmet need that did not account for condom use consistency. The consistency of condom use at last sex is relatively low with emotional partners at (41%), as opposed to with clients (90%). More so, majority of survey respondents (46%) reported condom negotiation with clients as ‘difficult’ or ‘impossible’. Such views (about difficulty negotiating condom use) are supported by the qualitative findings. Related studies illustrate that sex workers who use contraception often switch to condoms yet they are not consistently used in all sexual acts. Our findings also concur with studies that have documented high rates of unintended pregnancy and unmet need for contraceptive services among FSWs despite being specific targets of HIV prevention interventions [16,17]. In sum, this study as others before demonstrate that FSWs health needs are rarely addressed and their access to care and support for HIV/AIDS and other SRH services is much delayed (if they access services) and limited. Consequently, addressing the gap in SRH services require identifying potential strategies for increasing FSW consistent use of highly effective contraceptives for preventing unintended pregnancy. Undertaking targeted prevention is critical and is an important means of preventing vertical HIV transmission, by reducing risk of unintended pregnancy among HIV-infected women.

Male sex workers

Male sex workers have become increasingly visible in Kenya but there is limited information about them. Formative research in Mombasa in 2002 and a follow up study in 2007 indicated the existence of men selling sex to other men and their mobility patterns [18,19]. In the cities like Nairobi and Kisumu segments of MSW groups have been identified by organizations implementing peer-led programs. However to date little is known about MSWs population size and overall HIV prevalence. Yet important conclusions from available data are that MSWs engage in high risk sexual activities. For instance, many engage in unprotected anal sex and their knowledge about appropriate risk prevention measures is inadequate. Several studies show that men who have sex with men are particularly vulnerable to HIV due to the high efficiency of HIV transmission inherent in exposure to the virus in anal sex and because this population group commonly has an extensive network of sexual partners [20]. A study of MSWs in Mombasa, found that less than half of participants surveyed consistently used condoms with their male clients [21, 22]. The HIV and STI vulnerabilities suggested by Geibel (2008) were confirmed by findings that 25% of men in a similar population near Mombasa were HIV infected. In a similar way, our study findings show that MSW are not an isolated group but are well integrated with the general population. In our study of MSW, participating men alluded to erratic or low condom use with regular partners and clients. Data
show that many considered condoms ‘very necessary’ to avoid infection, bar most men associated erratic use to sexual pleasure, monetary gain, trust and influence from clients. Male sex workers were also found to have low condom use rates with their female sexual partners supporting similar evidence from existing studies. Heightened vulnerability to infection among MSW is also mediated through socio-economic and cultural factors. For instance, perceptions and experiences of stigma and discrimination hinder many men from openly discussing their sexual behaviour or seeking care. Similarly, the law in Kenya criminalises same-sex sexual activity making it difficult for HIV prevention programs to fully address this population’s health needs. The application and enforcing of anti-prostitution laws is well documented in Kenya and potentially limits public health initiatives [23]. Beyond this, organizations that conduct HIV prevention education activities in Mombasa and Nairobi continue to report incidents of abuse from clients and law enforcement agents which sometimes obstruct peer-led activities and provision of services. Access to services for most MSW is inadequate or non existent, many barely receive prevention and care services. Often MSW are less visible than their female counterparts. As it is most prevention efforts target FSW and hence failure to meet male sex workers HIV and SRH health needs.

**HIV Positive Persons**

Until recently, prevention strategies have been reluctant to target HIV positive persons because of a justifiable concern about further stigmatizing them [24]. However, considering that every new infection starts with someone who is already infected, failing to target HIV positive infected people in prevention efforts is a missed opportunity to avert new infections. Our studies (Chapter 5.1; 5.2), provides insight into changes in sexual behavior that occur among HIV-positive persons receiving ART and also documents sexual behaviors of PLHIV in the community who have little or no contact with HIV care services. As shown in other related studies [25, 26], results presented in (chapter 5.1) demonstrate that there was no overall increase in unsafe sex among persons receiving ART [27, 28]. However, despite this important finding, unprotected sex remains a critical issue, especially in stable and casual partnerships many of which contain HIV discordant couples or HIV negative partners [29]. In addition, findings show that condom use was hindered by religious and cultural barriers. Low uptake of condoms is mainly attributed to low levels of knowledge and perceived misconceptions. Conversely, in the study among PLHIV not accessing HIV treatment services (chapter 5.2), survey findings reported prevalent high risk sexual behaviours. Of the 60% sexually active PLHIV, 25% reported having multiple sexual partners and unprotected sex reported in 52% of sexual partnerships; 32% had HIV negative partners and 54%
were with partners of unknown HIV status. Overall, research findings from these two studies suggest the need for improved attention to implement risk reduction strategies among PLHIV’s accessing treatment and care services as well as those healthy PLHIVs within communities. HIV prevention initiatives should also seek to improve access and linkage to care among PLHIV’s given that currently in Kenya there are an estimated 1.5 million persons living with HIV and an estimated 70% of PLHIV are not receiving ART [29]. Thus, a large number of PLHIV are potentially outside regular health care and HIV prevention services. Lack of prevention services for PLHIV can potentially lead to heightened high risk behavior and increase the risk of HIV re-infection or onward transmission to sexual partners.

6.2 Limitations

Although the research reached its aims there are some limitations. The ability to generalize study findings to other settings may be limited. In particular, study findings may not be broadly applied even across study sites given the marked differences between the locations. For instance, the socio-economic and demographic differences may make it difficult to directly compare or infer findings. Additionally, our sample may not have been representative of all survey participants (sex workers and persons who are HIV positive) sampled in Mombasa and Naivasha. Moreover, since sex work is illegal in Kenya and highly stigmatized, we were unable to randomly sample this hard-to-reach population. Hence, broader interpretations of the findings of this study must be made with caution.

In addition, like all sexual behaviour surveys, the reported studies in this thesis are subject to response biases (Chapter 4.3; 5.2). It is also possible that some participants might have lied about their status (i.e trading in sex or being HIV positive) in order to participate in the study and obtain the compensation provided (Chapters 4.1; 4.3; 5.2). However, efforts to limit this was made by asking for referrals from peer educators, CHWs, PTC members, showing proof of HIV status and using screening questions to determine study eligibility. In addition the compensation amount provided was approved by the various ethics bodies and was in line with similar past studies.

Likewise, the absence of data from clients of sex workers also limits the ability to generalize findings more so to comprehend their motives for violence, unprotected sex and contraceptive use. Even with these limitations, we were able to generate data documenting detailed information on behaviours of different populations who are hidden and hard to reach. Whereas survey findings of low condom use consistency and high levels of unmet need for contraception potentially have
implications on the key vulnerable populations in this setting. There are likely broad commonalities between the experiences of study group and those of other participants in Kenya and other sub-Saharan Africa countries.

6.3 Implications for Sexual and Reproductive Health and HIV Prevention and Control in Kenya

The findings of studies described in this thesis have various implications for SRH and HIV prevention and control in Kenya. Because majority of key population groups in Kenya face considerable SRH and HIV risks, interventions addressing FSWs, MSWs, PLHIV and other key affected groups are urgently needed. Interventions for FSWs have been ongoing for over two decades mainly in the cities of Nairobi and Mombasa but health problems for this population group continue to be documented. On the contrary virtually nothing has been initiated so far for male sex workers and other key population groups.

FSWs comprise a group especially vulnerable to SRH problems and HIV infection, for a variety of reasons including that in heterosexual sex, male to female infection is easier than female to male. In a ‘mixed’ epidemic like Kenya, clients of FSW may also be at risk of transmitting HIV, further compounding womens sexual and reproductive health. Similarly gender inequality heightens sex workers vulnerability to disease risks. In many instances, relentless violence among sex workers is enhanced by societal norms regarding sex work. This is further compounded by existence of laws criminalizing sex work. Similarly, stigma and discrimination directed at sex workers operates powerfully at community levels, placing sex workers at risk of social exclusion, ostracization, and violence, and strongly influencing their health seeking behaviour.

Our findings about sexual and gender-based violence (Chapter 4.1) and contraceptive needs of FSWs (Chapter 4.3) show that clients hold the power in determining safer sex, contraceptive use and even payment for sexual service. Usually sex workers are forced into unprotected non-consensual sex which potentially leads to unintended pregnancies or STI. Consequently, preventing violence against sex workers is a major way of limiting womens vulnerability to HIV infection and averting poor SRH outcomes. One way to achieve this is through enhancing partnerships between sex workers, civil society organizations and government to reform the existing legal framework. Such reforms should be based on sound public health evidence and human-rights principles rather than criminal and punitive sanctions [3, 30]. In addition, clients of sex workers and the law enforcement agents should also be targeted with prevention
interventions. For instance, sensitizing them on the need for a peaceful coexistence and respect of sex workers health and human rights could be a first step towards meeting these goals.

Our finding in Chapter 4.2 supports the promotion of female-controlled barrier methods. Sex workers exposure to coerced unprotected sex and their susceptibility to infection with STIs, calls for development of technologies that are under their control and can potentially be used without their partner's knowledge. In particular, the use of such methods is recommended in relationships in which sexual negotiations are limited such as in sex work or among women who experience intimate-partner violence. Recently research has focused on vaginal microbicides and cervical barriers, such as the diaphragm, which may be used without male co-operation or knowledge [31, 32]. These methods are not intended to replace condom use, but rather compliment existing options. Increased vulnerability together with a lack of prevention options for sex workers limits the impact of current initiatives to reduce transmission of HIV and other STIs.

In addition, our findings demonstrated that FSWs largely practised contraception and a majority already had children and desired to delay and limit births. However, the nature of sex work presented many women with enormous challenges with using contraceptives. Therefore to address these gaps, our data support promotion of effective contraceptive methods that are more suited to sex work. For example, long term family planning methods that are non-coitally dependent such as injectables and implants maybe preffered. Other than that, the promotion of dual method use would likely lessen the risk of unintended pregnancy in the many situations when FSWs cannot negotiate for safer sex or take pills every day. In sum, delivery of comprehensive prevention services could help reduce the risk of adverse outcomes associated with unintended pregnancy, ranging from the complications of unsafe abortion to poor birth outcomes resulting from compromised maternal health status. Furthermore, provision of contraceptives to sex workers not desiring pregnancy is an important means of preventing vertical HIV transmission, by reducing risk of unplanned pregnancy among those women who happen to be HIV-infected.

Our finding regarding the health needs of male sex workers (Chapter 4.4) call for policies that promote targeted HIV interventions among MSW. Majority of MSW are exposed to a variety of health risks, often HIV rates among them are much higher than the general population. Hence government policies should ensure that MSW and other MSM have equal access to health care, HIV information and other supportive services, and do not face arrest or detention for seeking these services. Additionally, interventions targeting this population group should seek to ensure that prevention, care, and treatment programs are free from stigma and discrimination. Moreover,
given the high rates of infection comprehensive HIV strategies that consist of specifically tailored
HIV prevention, STI treatment, condom and lubricant provision for this particular group of men is
urgently needed. To facilitate delivery of these services, it is important that health care staffs
receive appropriate training on the health needs of MSW and are sensitized to serve them in
confidential and non-judgmental environments. In line with this, a major prevention priority is to
further engage research to map the epidemic and identify existing risk patterns among similar
subpopulation groups. Such data-driven agenda will facilitate public health initiatives to implement
evidence-based programs.

Similarly, our study showed that programs for persons living with HIV are limited in Kenya, yet
SRH services for people living with HIV is essential to ensure their overall health needs are
adequately addressed. Existing, HIV prevention programs should therefore widen their focus and
intergrate existing programs with prevention interventions for PLHIV in clinical or non-clinical
contexts. Results from this study show that unprotected sex remains a critical issue among
PLHIV's and many are in sexual relationships that contain HIV discordant couples or have partners
of unknown status [28]. As a result targeting PLHIV with risk reduction interventions is an
important means of breaking the cycle of infection. The present, HIV prevention campaigns
focusing on universal vulnerability have not been overly effective in passing prevention messages
in sexual partnerships where trust, fidelity and fertility desires are mostly demanded and are likely
barriers of condom use. Whereas, owing to the risk of partner transmissions, the principles of
self-protection and precaution of infecting partners should be made a priority in interventions
targeting PLHIV. Thus, to address PLHIV health needs, targeted programs must promote couple
testing and encourage disclosure of HIV status to both regular and non regular partners.
Disclosure of HIV must be promoted so as to accord individuals the right to make an informed
choice. The right to knowing a partner health status is critical and outweighs the right to privacy
of one's health condition. As a consequence, concerted efforts to promote condoms is required
emphasizing their use with all partners irrespective of their HIV status. Furthermore, it is also
possible newly diagnosed PLHIV and those outside the ambit of health care lack adequate
prevention-related information, making it important to shift the current HIV prevention efforts to
target healthy positives.

In general, Kenya has witnessed the broadening of programmatic focus over the past years,
though important, these efforts have continued to overlook special health and prevention needs
for key vulnerable populations. More so, the wide gulf between prevention services targeting the
general population and those directed at specific sub populations suggest that a broader and
more inclusive approach is needed. Therefore to move the prevention agenda forward, SRH and HIV prevention initiatives for population groups of interest must embrace a rights-driven agenda that consists of meaningful participation at all levels to gradually challenge the structural barriers including social inequalities that obstruct service delivery. Adopting such an approach has potential to provide an all inclusive and non biased service that can reach out to sex workers, PLHIV and other key vulnerable populations.

**Conclusions and recommendations for HIV and sexual and reproductive health risks**

- Sexual and gender-based violence is pervasive among female sex workers and is a possible link to high rates of HIV and SRH problems.
- Our data underscores the development of effective female-controlled barrier methods that can be used by women in certain sexual relationships.
- The majority of PLHIV engage in high risk behaviour that can enhance onward transmission of HIV.
- Key population groups such sex workers, MSM, and PLHIV are a core group in SRH and HIV transmission in Kenya. Their continued lack of services undermines the current HIV prevention efforts.

**Recommendations for targeted interventions**

- Interventions for key population groups should embrace integrated interventions premised on combination prevention strategy centering on: biomedical, behavioural and structural interventions. By applying such strategies interventions programs can work over time within a given geographic area and population to deliver a comprehensive prevention response.
- Programmes targeting sex work and other key population groups should adopt a rights-based approach to advance public health programs.
- Sexual and reproductive health interventions should address sexual and gender-based violence; promote contraceptive use, and novel prevention technologies like cervical barriers and microbicides.
- Interventions should be initiated to empower sex workers and PLHIV and promote condom use for HIV prevention and as dual method to lessen the risk of unintended pregnancy and STIs.

- Promote quality of HIV and STI care services in public and private health facilities and offer appropriate training to health care staff to meet the unique needs of key population groups.

- Interventions should involve law enforcement agents and clients of sex workers because of the influence they have over sex workers.

**Recommended areas for future intervention (research)**

- Strategies that promote “community friendly” services and accord greater involvement of sex workers and HIV positive persons.

- Effective interventions to improve the quality of HIV and STI care services for key population groups in public and private health facilities.

- Targeted interventions that address sex workers and other vulnerable groups’ sexual and reproductive health needs and enhance linkages with HIV prevention care services are also recommended.

- Routine sexual behaviour and HIV and STI surveillance among most at risk groups are also important fields to direct research and intervention.
6.4 References


SUMMARY

This thesis investigates important determinants associated with SRH and HIV risks among key population groups in Kenya. Namely, we explored the intersection of violence and risk of HIV infection, acceptability of a female-controlled barrier method and assessed contraceptive needs among FSWs. This study also describes factors associated with increased risk for HIV among MSWs and also documents various SRH risks among PLHIVs in Kenya. In Kenya, key vulnerable population groups include, but are not limited to, female sex workers, male sex workers and their clients, men who have sex with men, mobile populations, and injecting drug users. Available data reveal extremely high levels of SRH and HIV risks among these key population groups. By contrast, HIV infection rates and other health problems affecting the general population remain low.

In Kenya, the emerging pattern of HIV infection which affects both the general population and specific population groups have raised questions as to whether sub-populations traditionally seen as most vulnerable to HIV and “hard to reach” are the main sources of new infections. This has led to increased attention aimed at addressing the emerging SRH and HIV risks among these “hidden” and “hard to reach groups”. At present, a better understanding is required of the factors associated with sexual risk behavior including SRH needs among these populations groups to effectively develop tailored interventions. This thesis focuses mainly on FSWs and MSWs, but also identifies people living with HIV as a priority group for targeted interventions. The studies presented deepen understanding on the spread of HIV and SRH vulnerabilities among different population groups of interest and seeks to identify effective prevention strategies to control these health problems.

Chapter 4.1 introduces detailed descriptions of FSW vulnerabilities to sexual and physical violence, and how violence impacts on their HIV risk. The study explored the social and legal contexts that underline the high levels of sexual and physical violence that pervade sex work in Kenya. Eighty-one female sex workers shared their experiences in eight focus-group discussions. The women’s narratives show that sex workers face double threat of violence from clients and the law enforcement agencies. Further, the results show that violence is commonly triggered by negotiation around condoms and payment for sexual service. Women are also exposed to violence due to pressing financial needs, gender-power differentials, illegality of trading in sex and cultural subscriptions that empower men. Risk for poor SRH outcomes may be increased during
an episode of sexual violence, but more importantly these risks are heightened in the event rape or coerced unprotected sex takes place. Widespread violence experienced by sex workers illustrates the significance of violence in the compendium of HIV prevention. An episode of violence can increase future high-risk sexual behaviours. Addressing violence through reforming punitive laws is a first major step towards reducing sex workers chances of becoming infected with HIV through the action of clients and law enforcing agents.

**In Chapter 4.2** we explored the acceptability of the diaphragm among female sex workers and women attending sexual and reproductive health services in Mombasa, Kenya. Data are reported from focus group discussions and in-depth interviews with women and men, following a prospective study investigating diaphragm continuation rates over six months. Data highlight the importance of female-controlled technologies in counteracting sociocultural vulnerability to HIV. Covert use of the diaphragm was noted by women as a favourable attribute especially in relationships in which sexual negotiation is limited. When compared to male condoms women felt empowered to use the diaphragm as they did not require male partner’s cooperation or approval. These experiences reflect the barriers women face in carrying out safer behaviour choices with condoms to postpone or limit the number of pregnancies. These difficulties are particularly pronounced in situations where women have no control over decisions about fertility, sexual pleasure and HIV prevention. In the context of an HIV epidemic where sex workers and mostly women bear the burden of HIV, female-controlled methods may be a crucial part of strategies to reduce infections [32]. Our results show that if proved effective against STIs, diaphragm uptake may be high in this setting but its use will depend on available options for contraception and for protection against HIV and other STIs.

Over the years, interventions for FSW in sub-Saharan Africa have often been focused to prevent sexually transmitted infections, including HIV while overlooking broader reproductive health needs. As a result, inadequate attention has been paid to issues such as unintended pregnancy and abortion and other heightened reproductive health risks among sex workers. We therefore investigated patterns of recent self-reported contraceptive use and unmet contraceptive needs among 597 FSWs in Mombasa and Naivasha Kenya (**Chapter 4.3**). Our findings showed that FSW frequently have multiple sexual partners highlighting their vulnerability to both unintended pregnancy and STIs, including HIV. The results also revealed a high reliance on male condoms, coupled with inconsistent use, which resulted in a higher potential for unmet need for contraception and likely exposure to infection with HIV and other STIs. Most women were concerned that sex work circumstances were risky and interfere with the correct and consistent
use of contraceptives such as pills that require to be taken on a daily basis. Focus group participants supported these views indicating that they would like to use methods that were effective but did not require daily intervention, such as injectable contraception or an implant. The findings suggest that interventions targeting female sex workers should promote dual method and deliver appropriate long term contraceptive methods to meet women's broader reproductive health needs.

Chapter 4.4 describes the dynamics of male-to-male sexual activities within the context of commercial sex in Kenya. In-depth interviews and focus group discussions (with 36 men) elicited information on the nature of male sex work in Mombasa. Research findings among the group of MSW revealed that condom use with clients and regular partners is low and is dependent on notions of sexual interference and motivations of clients. Similarly, low level of knowledge among male sex workers compounds sexual risk taking, with a widespread belief that the risk of HIV transmission through anal sex is lower than vaginal sex. Poor knowledge of transmission routes is exacerbated by public prejudice and family ostracism that generally depict the extent of social exclusion experienced by male sex workers. Participant's narratives also demonstrate the burden of stigma faced from close family, friends and health care workers. In effect, most respondents address pervasive stigma by attempting to evade scrutiny and adopting tactics like self-segregation and hiding their sexual identity or seeking social acceptance through marriage or having girlfriends. We recommend that comprehensive HIV interventions should consider the diverse socio-economic backgrounds, solicitation patterns and sexual behaviours of male sex workers in Kenya.

We also explored the role of PLHIVs in the HIV epidemic in Kenya. In Chapter 5.1, in-depth interviews were conducted with 23 sexually-active adults receiving ART in Mombasa, Kenya. Chapter 5.2 describes experiences of 698 PLHIV who were recruited in the community with little or no access to treatment and care services. The two studies provide insights into the sexual behavior and factors influencing condom use among PLHIV enrolled in health centers receiving ART treatment and those in the community with little or no contact with health care providers. Results from both studies underscore the importance of targeting PLHIV with intervention especially focusing on high risk sexual behavior, inconsistent condom use and HIV disclosure. Such programs have potential to minimize unprotected sex and inadvertently prevent onward transmission of HIV and other STIs. Results from these two studies emphasize the need for HIV programs to address the broader sexual and reproductive health needs of PLHIV in both clinical and non-clinical settings.
In conclusion, this thesis emphasizes that SRH and HIV programs should be evidence-informed and bring key affected population groups into the focus of SRH-HIV interventions. There is ample evidence that effective targeted interventions among key vulnerable groups can protect their health and improve their livelihoods in addition to having a dramatic impact on the course of national HIV epidemics [33, 34]. However, under existing circumstances, it is reasonable to state that violence, stigma, discrimination and fear of public exposure mean that these key population groups are less likely to access appropriate health services. In addition, sex work and homosexual activity is illegal under existing laws in Kenya. These practices are defined as a criminal acts, and engaging in them may result in detention or arrest for those suspected of being involved. The effects of these laws mean that a substantial segment of these population groups “remain in the closet” and in so doing perpetuate extensive marginalization and stigmatization that also prevent them to negotiate safer sex.

Consequently, as a priority our data supports: multilevel interventions, including legal reforms so that for instance laws governing sex work also promote health and human rights of these populations; promotion of more effective female-controlled barrier methods that can be used clandestinely by women who cannot afford to negotiate safer sex; access to provision of targeted community information and education; provision of prevention commodities like family planning commodities, lubricants and condoms for FSW, MSW and other men having sex with men; and equiping and sensitizing health care systems to serve vulnerable populations in confidential and non-judgemental environments.
LIST OF PUBLICATIONS


<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
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<tr>
<td>AIDS</td>
<td>acquired immune deficiency syndrome</td>
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<tr>
<td>ART</td>
<td>antiretroviral therapy</td>
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<tr>
<td>CHW</td>
<td>community health workers</td>
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<tr>
<td>CI</td>
<td>confidence interval</td>
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<tr>
<td>DHS</td>
<td>demographic health survey</td>
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<tr>
<td>FGD</td>
<td>focus group discussion</td>
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<tr>
<td>FHI</td>
<td>Family Health International</td>
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<tr>
<td>FP</td>
<td>family planning</td>
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<tr>
<td>FSW</td>
<td>female sex worker</td>
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<tr>
<td>GOK</td>
<td>Government of Kenya</td>
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<tr>
<td>HIV</td>
<td>human immunodeficiency virus</td>
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<tr>
<td>ICRH</td>
<td>International Centre for Reproductive Health</td>
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<tr>
<td>IDI</td>
<td>in-depth interview</td>
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<tr>
<td>IEC</td>
<td>information education and communication</td>
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<tr>
<td>IRB</td>
<td>institutional review board</td>
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<tr>
<td>KAIS</td>
<td>Kenya AIDS indicator survey</td>
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<tr>
<td>KDHS</td>
<td>Kenya demographic health survey</td>
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<tr>
<td>KNASP</td>
<td>Kenya National HIV/AIDS Strategic Plan</td>
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<tr>
<td>KSH</td>
<td>Kenya Shillings</td>
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<tr>
<td>MOH</td>
<td>Ministry of Health</td>
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<tr>
<td>MOT</td>
<td>modes of transmission</td>
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<tr>
<td>MSM</td>
<td>men having sex with men</td>
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<td>MSW</td>
<td>male sex worker</td>
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<tr>
<td>Acronym</td>
<td>Definition</td>
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<tr>
<td>MTCT</td>
<td>mother to child transmission</td>
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<tr>
<td>NACC</td>
<td>National AIDS Control Council</td>
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<tr>
<td>NGO</td>
<td>non-governmental organization</td>
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<tr>
<td>OR</td>
<td>odds ratio</td>
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<tr>
<td>PLHIV</td>
<td>people living with HIV/AIDS</td>
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<tr>
<td>PMTCT</td>
<td>prevention of mother-to-child transmission</td>
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<tr>
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<td>post test club</td>
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<td>sexual and reproductive health</td>
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<tr>
<td>STI</td>
<td>sexually transmitted infection</td>
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<td>UNAIDS</td>
<td>Joint United Nations Programme on HIV/AIDS</td>
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<tr>
<td>UNGASS</td>
<td>United Nations General Assembly Special Session</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>VCT</td>
<td>voluntary counseling and testing</td>
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