HIV in Kenya

Sexual behaviour and quality of care of sexually transmitted diseases

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Seksueel gedrag en kwaliteit van zorg van seksueel overdraagbare
aandoeningen

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Introduction

This thesis consists of studies assessing important determinants of the spread of HIV and other Sexually Transmitted Diseases (STDs), namely sexual risk behaviour, health seeking behaviour for STDs, and the quality of STD care. The data on which these studies are based were collected in Kenya in the first half of 1999, in collaboration with the Department of Medical Microbiology of the University of Nairobi, and the Nyanza Provincial Medical Office in Kisumu. The data collection was part of a project funded by the European Commission (contract B7.6211/96/010). In this project, a computer model called *STDSIM,* which simulates transmission of HIV and various cofactor STDs through a population network of simulated individuals, was developed and applied to Nairobi and Nyanza province.[1]

The different studies that are described in this thesis fill in gaps in knowledge concerning determinants that are crucial in the spread of STD/HIV. For example, numerous studies have focused on commercial sex in Nairobi, but few have focused on the role of commercial sex in the rural provinces of Kenya. In Nairobi, not much was known about the quality of STD care, nor on health seeking behaviour for STDs among the general population. Knowledge of these aspects can help to identify and develop prevention strategies to control the HIV epidemic. This thesis aims to deepen the understanding of important determinants of the heterosexual spread of HIV, and to assist in identifying effective prevention strategies.

This introductory chapter gives the background to our studies. It describes the magnitude of the global HIV epidemic, with a special focus on sub-Saharan Africa (1.1), and gives an overview of possible HIV prevention strategies (1.2). Subsequently, it pictures the situation in Kenya with regard to sexual behaviour, STDs and quality of STD care (1.3). The chapter ends with describing the research questions that we tried to answer and giving an outline of the thesis (1.4).

1.1 HIV/AIDS, a global problem

The global HIV epidemic is an unprecedented threat to human health and development. Since the first case of acquired immunodeficiency syndrome (AIDS) was diagnosed in 1981, over 20 million people have died of AIDS. By the end of 2004, about 39.4 million people were estimated to be infected with the human immunodeficiency virus (HIV), the underlying cause of AIDS.[2] The virus is thought to have originated from a simian (monkey) immunodeficiency virus (SIV) in Africa in the mid 20th century, but it only began to spread rapidly among humans in the early 1980s.[3, 4] Two types of HIV are distinguished, HIV-1 and HIV-2, which developed separately from different SIVs. HIV-2 is mainly found in West-Africa, and is the cause of relatively little disease burden due to low infectivity and longer survival of the infected patient.[5-7] HIV is transmitted mainly through vaginal or anal sexual intercourse. Other modes of transmission are blood transfusion, needle exchange in case of intravenous drug use, and mother-to-child transmission during birth or via breastfeeding. The HIV virus causes AIDS by infecting a

patient's white blood cells, thereby impairing the immune system. In the absence of specific care, patients develop AIDS within 8 to 10 years after HIV infection and die 1 to 2 years thereafter. Death follows from opportunistic infections such as tuberculosis, from fatal cancers, or due to general weakening and wasting.[8, 9]

After two decades, the HIV epidemic is still expanding rapidly, with new epidemics advancing in Eastern Europe and Asia where injecting drug use is the main mode of transmission, followed by heterosexual transmission. The large, populous countries of China, India and Indonesia are of particular concern. Although general prevalence is still low in these countries (about 0.1%, 1%, and 0.1% respectively, see Figure 1.1), serious epidemics are underway in individual provinces and states, where sexual transmission becomes more dominant.[10]
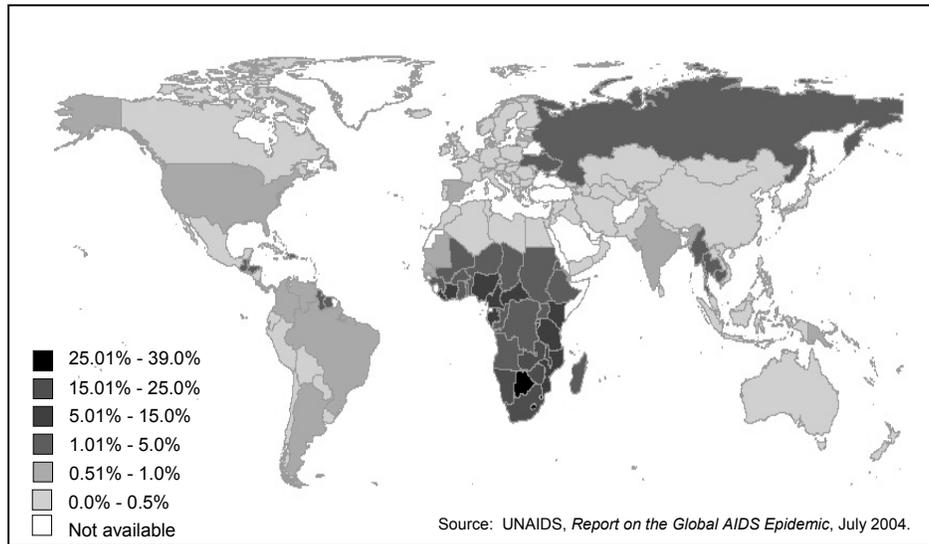
Figure 1.1 HIV prevalence per country in adults 15-49, as of end 2003

Sub-Saharan Africa is the region that is hardest hit by HIV/AIDS: of the 4.9 million people who became globally infected in 2004, an estimated 3.1 million people are living in this subcontinent.[2] The predominant mode of HIV transmission is heterosexual intercourse, and most sub-Sahara African countries experience generalised epidemics in which HIV has spread throughout the general population rather than being confined to high-risk groups such as sex workers and truck drivers. There is a large diversity across the subcontinent in the levels and trends of HIV infection. In Southern Africa, HIV prevalence has increased rapidly in the last decade, rising among adults aged 15-49 as high as 37% in Botswana, 25% in Zimbabwe, and 22% in South-Africa by the end of 2003.[10] This fast and large HIV spread can be explained by a combination of factors, such as

poverty, social instability, high levels of STD, sexual violence, and high mobility due to the migratory labour system.[10] In West and Central Africa, HIV prevalence remains stable and relatively low in most countries. In East-Africa HIV rates have levelled off, which is most notable in Uganda where national HIV prevalence dropped from around 15% in 1991 to 4% in 2003.[10]

Over the years, the proportion of women infected with HIV (as compared to men) has globally increased: the figure rose from 41% in 1997 to almost 50% by 2002. Nowhere is this more apparent than in sub-Saharan Africa, where 57% of infected adults are women and 75% of infected young people are women and girls.[10] This feminisation of the HIV epidemic is to some extent related to biological factors, as male-to-female transmission during sex is about twice as likely to occur as female-to-male transmission,[11] but social factors seem to be more important. Young African women usually have older male partners, who are more likely to be infected than young men.[12] Gender inequalities and lack of power hamper women to negotiate condom use, especially within marriage. Furthermore, sexual violence is widespread in the region (certainly in the context of war and conflict), which increases the risk of HIV transmission for women due to damaged vaginal tissues.[13]

The epidemic is also affecting young people disproportionately: 15-24 year-olds account for half of all new HIV infections worldwide.[10] Almost two-thirds of these infected young people are living in sub-Saharan Africa. A variety of factors make young people vulnerable to HIV infection, especially in Africa. Conflicting norms and values about sexuality, the breakdown of traditional customs which informed young people about sexuality and reproduction, and increasing urbanisation and poverty all encourage premarital sexual activity among adolescents.[14] Most young people in Africa have an early sexual debut (often before their 15th birthday), and condom use is generally low. Adolescents have limited access to STD and family planning clinics, where they are often scolded or sent away by health workers. Furthermore, not all young people receive education on the HIV virus and modes to prevent transmission. In sub-Saharan Africa, 58% of primary school and 64% of secondary school students receive basic AIDS education.[15] Young women may be especially prone to HIV infection, in comparison to older women, due to larger areas of cervical ectopy and trauma to the immature genital tract during sex.[16-18]

The HIV epidemic has a devastating impact on individuals and households. Life expectancy has been reduced by decades in the worst-affected countries in sub-Saharan Africa. In these countries, HIV will have a distorting influence on the population structure: there will be far fewer people in mid-adult years, and fewer women than men aged 30-50. In sub-Saharan Africa, 12 million children have lost one or both parents to AIDS and grow up in deprived and traumatic circumstances without the support and care of their immediate family.[10] In most countries, women bear the largest AIDS burden. Young girls are sometimes withdrawn from school to take care for infected family members. Adult women widowed by AIDS may lose their land and property after their

husbands die. Older women often take care of adult children when they are in the terminal AIDS stage and take over the care of their grandchildren. At the household level, AIDS causes loss of income of a household member, it creates care needs that are sometimes met by withdrawing other household members from work, and it brings high medical and funeral costs. The impact on the society at large and on macro-economic development is profound as well. Economic growth has been slowed down, poverty has been deepened, and the health care system has been erased. In the agricultural sector, chronic food shortages have been intensified in parts of sub-Saharan Africa due to loss of a substantial part of the agricultural workforce. HIV also has a tremendous impact on the educational sector, because teachers die of AIDS and children drop out of school either to take care of family members or because there is no money for school fees. In the health sector, AIDS depletes the numbers of health care workers, thereby exacerbating the already existing human capacity crises due to the brain drain of health workers. It deteriorates care for other common diseases and it can even decrease child vaccination rates.[19]

In the past decade, antiretroviral therapy (ART) has led to dramatic reductions in HIV-related morbidity and mortality in Western countries, but also in small-scale pilot studies in developing countries. In recent years, access to ART is increasing for resource-poor countries because of the increasing availability of cheap generic drugs and global funds. In September 2003, WHO/UNAIDS launched their '3 by 5' goal to have 3 million people in low- and middle-income countries on ART by the end of 2005. In Africa, several countries are in the process of scaling-up the number of people on ART treatment. Cameroon, for example, has set a national target of providing ART therapy to 36.000 people living with HIV/AIDS by the end of 2005.[20] This scaling up of ART can bring tremendous benefits to large groups of people and can have a large beneficial impact on the society as a whole. It will prolong healthy life-years in those infected with HIV, and prevent further sexual and mother-to-child transmission. On a society level it may enable the strengthening of the educational, health, agricultural, and other sectors.

Still, less than 10% of people in low-and middle-income countries who need antiretroviral therapy were obtaining it by the end of 2003, and it will take years and years to come before ART is available to all who need it. Universal access to ART will only be possible and sustainable if HIV incidence is sharply reduced, because otherwise the availability of ART drugs will be swamped by demand.[10] Prevention of infection therefore remains to be the most important response to the HIV/AIDS crises, even in the era of ART. Furthermore, the effectiveness of ART in reducing the spread of HIV remains to be seen, due to factors such as drug adherence and resistance, sub-optimal community uptake, and behavioural disinhibition (increased risk behaviour of people who feel protected by ART). In absence of an effective vaccine, the most important mode to curb the HIV epidemic remains prevention of HIV infection. We have therefore focused our research on aspects that can assist in identifying and developing prevention strategies to control the HIV epidemic

This thesis describes studies that were conducted in Kenya, a country in east Africa. We choose Kenya because our studies were financed by the European Commission (EC) and we had to link up with already existing research groups financed by the EC which happened to be concentrated in Kenya. Another reason for choosing Kenya was that, at the time when the overall project was initiated of which the studies described in this thesis were part (i.e., early 1990s), HIV prevalence levels were highest in east Africa (although soon after prevalences in southern Africa exceeded those in east Africa).

Kenya has been seriously affected by HIV/AIDS in the last two decades. HIV seroprevalence levels among pregnant women in major urban areas rose from less than 3% in 1987 to over 15% in 2000.[21] More than 85% of sex workers tested in Nairobi and more than 55% of sex workers tested in Mombasa were found to be HIV-positive in 1992.[21] In recent years, the HIV epidemic in Kenya seems to have passed its peak, and national HIV prevalence is estimated to have dropped from 8.0% in 2001 to 6.7% in 2003.[22] In 2003, the highest HIV prevalences were found in the two areas where our studies took place: the densely populated Nyanza province (15.1%), and Nairobi (9.9%). All other provinces remained below the national level of 6.7%.[23] In Kisumu, the capital of Nyanza, HIV prevalence was 30.1% among women aged 15-49 and 19.8% among men aged 15-49 in 1997/8.[24]

The HIV epidemic in Kenya is estimated to have a profound impact on the nation's demographic and socio-economic development. Largely due to AIDS, life expectancy in Kenya dropped from 60 years in 1990 to 45.5 years in 2002.[25] The probability of dying between the ages of 15 and 60 years increased from 18% in the early 1990s to 28% by the end of the decade.[26] The proportion of all children under the age of 15 who became maternal or double orphans as a result of AIDS was about 0.4 percent in 1990 and is expected to rise to about 16.5 percent in 2010.[27] AIDS is forecast to cost the country close to 1.5% of economic growth annually.[28] Kenya's gross domestic product is projected to be 14.5% lower than it would have been in the absence of AIDS.[29] It is estimated that the loss of labour force due to AIDS in Kenya was 3.9 % in 2000, and this is projected to increase to 16.8% in 2020.[30] It is calculated that Kenya would lose about 2.1 percent of its available teacher labour each year over the 2000-2010 period.[27] Because school fees pose significant problems for AIDS-affected households, Kenya has removed education user fees, thereby providing children who would not otherwise be able to attend school with an invaluable opportunity.[10]

Kenya has currently about 1.2 million people living with HIV/AIDS, on a total population of 32 million. About 280,000 infected people are in need of ART, and the national target is set at having 140,000 people on ART by the end of 2005.[31] By the end of 2004, about 28,000 people were receiving ART from 33 treatment centres.[32] Thus, Kenya is lagging behind its stated target, with the greatest hindrance being a shortage of qualified personnel to conduct key tests such as viral load and CD4 counts. In Kenya as well as in other low-

income countries, prevention of infection will therefore remain the most important response to the HIV/AIDS crises in the coming years.

1.2 Interventions to prevent HIV infection

HIV prevention programmes potentially have a huge effect on HIV prevalence. A modelling exercise has estimated that 29 million of the 45 million new infections projected to occur worldwide in this decade, could be averted in case of timely scaling up of a comprehensive interventions package.[33] Effective, inexpensive, and relatively simple prevention interventions do exist, but they are seldom implemented at a scale that would turn the tide of the epidemic. In sub-Saharan Africa, only 5% of pregnant women have access to services to prevent mother-to child-transmission; less than one third of the estimated 1.7 million sex workers are covered by outreach prevention programs; and less than a quarter of street children are covered by HIV prevention programs.[15] This clearly illustrates the need to scale up strategies to prevent HIV.

HIV interventions can take place at different point of time in the process of getting infected. Figure 1.2 gives a schematic flowchart of the process of how people get heterosexually infected with HIV, in relation to starting points for interventions to prevent HIV. A generally propagated method to avoid infection is to convince adolescents to delay sexual debut or abstain from sex (the A in so-called 'ABC campaigns'). If individuals do engage in sexual relationships, they can be counselled to reduce the number of partners or stick to one partner (the B of Being faithful in ABC campaigns). They can also be advised to choose less risky partners, for example by not visiting sex workers anymore.

People who have had unsafe sex may be encouraged to get voluntary counselling and testing, to become aware of their HIV status. They may also be stimulated to use male or female condoms (the C in ABC campaigns). In case people are not using condoms, they run the risk of getting infected with the HIV virus. Observational studies, e.g. in Kisumu in Kenya, have shown that the risk of getting infected with HIV is smaller for men who are circumcised, than for men who are not circumcised.[34] A recent South African randomised controlled intervention trial has confirmed the protective factor of male circumcision for the transmission of HIV.[35] In case the results of two other African circumcision trials that are still ongoing will show the same result, male circumcision will become a powerful intervention to reduce the spread of HIV.

The risk of HIV transmission is usually rather small, below 0.1% during a single vaginal contact if no partner has an STD.[11] However, if one of the partners is infected with an STD, the risk of HIV transmission increases between 2 to 25-fold.[36] Treatment of STDs is therefore considered to be an important HIV prevention strategy. But in order to be treated for an STD, people have to be educated to recognise their symptoms. Their health care seeking behaviour can be influenced, for example by encouraging them to seek care promptly or to go to effective facilities instead of treating themselves by buying pills in the
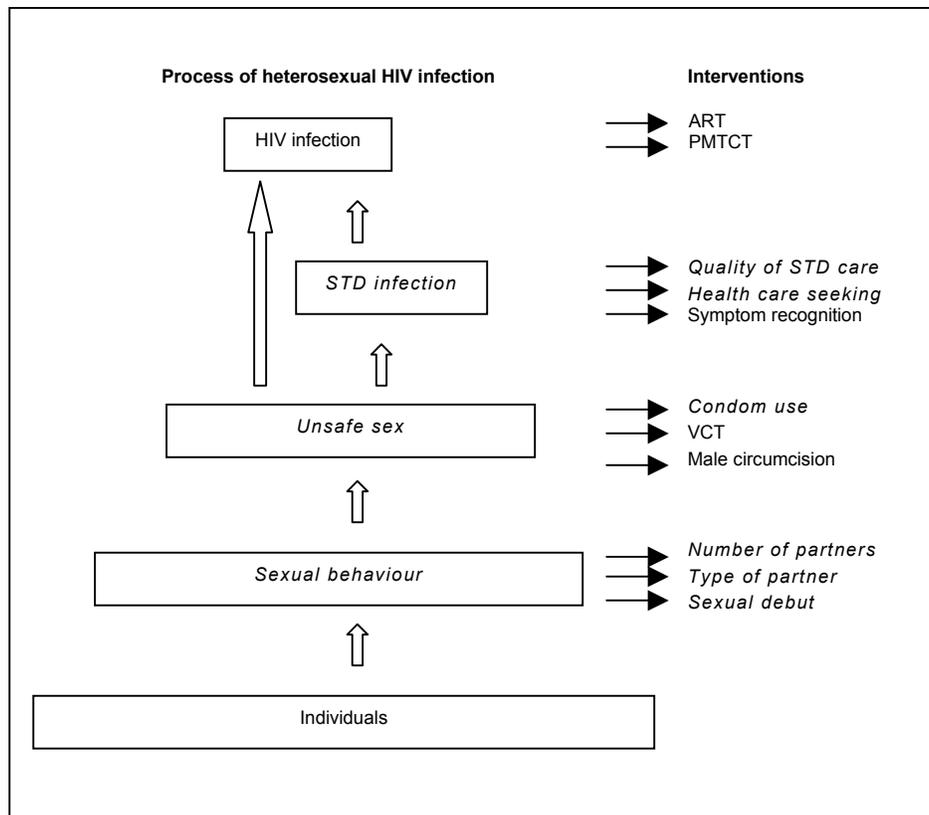
Figure 1.2 Schematic flowchart of the process of heterosexual HIV infection in relation to starting points for prevention interventions. Concepts in italics are addressed in this thesis.

ART = antiretroviral therapy, PMTCT = prevention of mother-to-child transmission, STD = sexually transmitted disease, VCT = voluntary counselling and testing.

street. Another intervention strategy is to improve the quality of STD care of health care providers.

If - despite all prevention efforts - people do get infected with HIV, it is crucial that they receive ART to prolong their own health but also to protect their sexual partners from HIV acquisition. For pregnant women it is important to receive ART for prevention of mother-to-child transmission (PMTCT), so that the chance that their newborn babies become HIV-positive is minimal.

For each of the mentioned starting points for prevention interventions there are examples of successful HIV prevention programmes in the African context. A school health education programme to stimulate abstinence and partner reduction in 95 primary schools in Uganda, trained teachers during a 1-week session to use a variety of methods, such as role playing, essay and song writing, audio-visual materials, plays, and games. Two years

after initiation of the intervention, the percentage of virgin students increased dramatically, and students who were already sexually active reported a decrease in multiple sexual partners.[37] There is ample evidence that couples who receive VCT and are tested serodiscordant largely increase their condom use, as well as individuals who are tested positive.[38, 39] Some studies have shown that VCT is not an effective primary prevention strategy for uninfected participants,[39, 40] but randomised controlled trials in Kenya and Tanzania showed that condom use with casual partners increased significantly more among persons receiving VCT than among persons receiving STD health information.[41] Social marketing programmes have largely increased condom sales, distribution and use among the general population through mass media advertising and interpersonal communication such as peer education and community based theatre. For example, condom use with non-regular partners was significantly higher in provinces in Mozambique where a social marketing programme had been ongoing for 18 months as compared to other provinces where the programme had started recently.[42] But also condom promotion programmes directed at specific target groups such as female sex workers have been successful. In Cotounou, Benin, condom use with clients rose significantly between 1993 and 1998, whereas STD prevalences (syphilis and gonorrhoea) declined in the same period, as a result of an ongoing educational campaign aimed at female sex workers.[43]

HIV interventions in the field of STD symptom recognition and health care seeking have also been successful in Africa. In Nigeria, an intervention trial in secondary schools aimed to increase knowledge with regard to STD symptoms and to encourage students with STD symptoms to seek care from medical doctors rather than to self-treat or visit untrained medicine dealers. Ten months into the intervention, students could mention more STD symptoms than before. Treatment by private physicians had increased significantly (from 18% to 41%, OR 2.1) whereas self-treatment or treatment by medicine dealers/untrained pharmacists decreased (from 36% to 25%, OR 0.87 and from 15% to 4%, OR 0.44, respectively).[44] Improving the quality of STD care has the potential to significantly reduce HIV incidence. The famous Mwanza trial in Tanzania showed a 38% reduction (95% CI 15%-55%) in HIV incidence in intervention communities, after strengthening syndromic management of STDs in primary care clinics.[45] A trial in primary care clinics in rural South Africa showed the impact of health worker training and STD syndrome packets (containing recommended drugs, condoms, partner notification cards and information leaflets) on the quality of STD case management. After the intervention, simulated patients were more likely to be given recommended drugs (88% vs. 50%, p<0.01) and more likely to be correctly case managed (given correct drugs, partner cards and condoms; 83% vs. 12%, p<0.005).[46]

Regarding prevention of mother-to-child-transmission, many African countries have effectively implemented this by offering VCT to pregnant women and administering a single-dose nevirapine regimen to both mother and newborn, thereby reducing the chance

on HIV transmission from about 25-40% to less than 15%.[47-49] Much debate is lately ongoing on this policy, because recent studies suggest that a single-dose nevirapine for the mothers during delivery may give them a higher chance of developing resistance when they start using ART later in life.[50] Regarding ART, it is rather too early to estimate its effect on HIV spread for sub-Saharan Africa. There have been signs that the introduction of ART in the US has led to a decline in infectivity among homosexual men (60% decline in the per-partnership infectivity in San Francisco), but that this benefit has been offset by an increase in unsafe sexual behaviour.[51] In the UK, widespread use of ART among homosexuals did not result in a decline in HIV incidence.[52] In Taiwan, free access to ART led to a more than 50% decrease in the estimated HIV transmission rate, and ART seems to have contributed to the control of the HIV epidemic in Taiwan.[53] It is not sure what the effect of ART will be for the spread of HIV in sub-Saharan Africa; it will depend largely on the proportion of people on ART and the increase in risk behaviour due to ART optimism.

Besides health interventions, initiatives to enhance economic and social development can also have a huge impact on HIV transmission. Studies in sub-Saharan Africa show that men and women living in areas where indicators of development (life expectancy, literacy) are higher, are significantly more likely to use condoms.[54] Boys in Zimbabwe who remain in school and have intact families are more likely to practice safer sex than untimely school leavers.[55] Empowerment of women and girls is also crucial in preventing HIV infection. One of the best ways to protect girls from HIV exposure is to keep them in school.[10] Eliminating school fees in Uganda and Kenya may therefore prove to be one the most powerful strategies to reduce school dropout and prevent HIV.

Choosing the best strategies to prevent HIV transmission also depends on the phase of the epidemic. In beginning epidemics it is most cost-effective to focus interventions on high-risk groups such as commercial sex workers, their clients, or mobile groups such as truck drivers.[56] In generalized epidemics a more global approach is required of providing interventions to whole segments of the population such as young people or village inhabitants.[57] In both cases, it is advisable to also educate the general population to make them aware of the HIV/AIDS epidemic in their country.

That nationwide attempts to prevent infection are indeed able to reduce HIV prevalence is illustrated by a number of countries. The best example is Uganda, where national HIV prevalence dropped from about 15% in 1991 to about 4% in 2003. This may partly have occurred through selective mortality of HIV positive individuals and the fact that people may have changed their behaviour after seeing friends and family members die of AIDS. Control strategies also have played an important role, in particular emphasising delayed sexual debut, partner reduction and condom use through a variety of prevention approaches including community mobilisation, innovative NGO projects, and public education campaigns. Strong political leadership, open communication and destigmatisation were key aspects in the success of the national response.[10, 58] Another

example is Thailand, where a '100% condom use' policy among sex workers and their clients was highly successful, and where men reduced their use of brothels.[59] Other more recent examples of countries that seem to have effectively implemented national HIV prevention programmes are Brazil (focus on ART provision),[60] Cambodia (focus on 100% condom use in commercial contacts),[59] and the Dominican Republic (focus on partner reduction and condom use in casual/commercial contacts).[61]

In Kenya, it is not sure what exactly the overall effect of interventions has been on the course of the HIV epidemic. Country-wide HIV data only became available recently, with the Demographic and Health Survey including HIV testing in 2003.[23] In Nairobi STD rates have dropped dramatically in the nineties, most likely due to a prevention programme focusing on female sex workers and an STD treatment programme for the general population.[62] For other regions there is some evidence for success of interventions, such as a programme targeted at truck drivers in Mombasa,[63] but most of these initiatives have been rather small-scale. Perhaps the most important challenge for Kenya is to expand STD treatment and community STD/HIV prevention programmes to a much larger scale. A significant impact in reducing the STD/HIV burden will not occur until activities are scaled-up from small demonstration projects to district, provincial, and national levels.[62, 64]

1.3 Research on sexual behaviour, STDs, and quality of care in Kenya

The emergence of the HIV pandemic has given a strong impetus to research on sexual behaviour as well as STDs. In the beginning of the epidemic, much research on sexual behaviour focused on the gay community, especially in the United States. As the epidemic evolved, more and more research focused on heterosexual behaviour, especially in Sub-Saharan Africa where prevalence rates were the highest of the world. Because high-risk groups are responsible for most HIV transmission in beginning epidemics, initial research studied so called core groups, such as sex workers and their clients and truck drivers. Later research also focused on more general population groups such as youth and women. Most studies explored behavioural risk factors for the transmission of HIV such as condom use, knowledge, attitudes, practises, and behaviour (KAPB), risk perceptions, and evaluation of interventions.

In Kenya, research on sexual behaviour in the late 1980s and early 1990s focused on high-risk groups such as sex workers, STD patients, and truck drivers.[65-71] Slowly, other lower-risk groups also began to be studied, such as adolescents, clients of family planning clinics, and household members.[72-78] The majority of these studies were conducted in Nairobi[72-74], very few were conducted elsewhere in the country[75-77], and only 1 was conducted in Nyanza province (i.e., Kisumu town)[78]. Therefore, we decided to focus our study of sexual behaviour at Nyanza, the province with the highest HIV levels in the country. Because differences between urban and rural areas received little attention in the existing studies,

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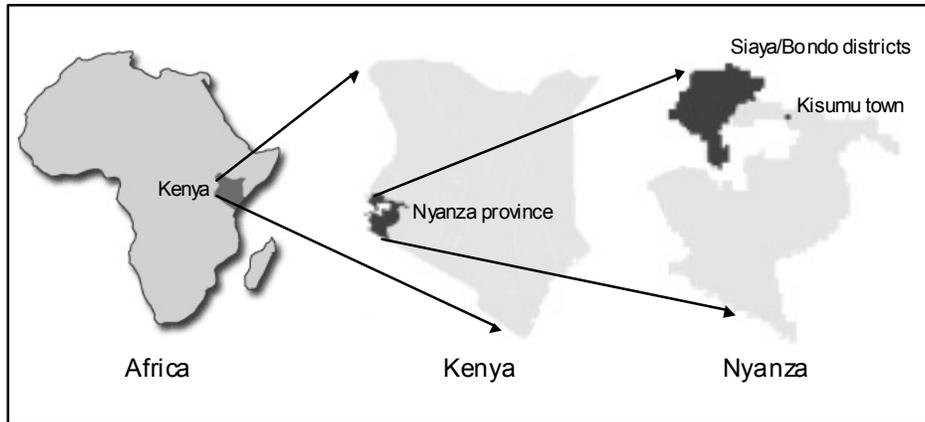
Figure 1.3 Maps showing the locations of Africa, Kenya, Nyanza province, Siaya and Bondo districts, and Kisumu town.

we focused our studies on the comparison of sexual behaviour in urban and rural sites within Nyanza. Kisumu town, the third largest city in Kenya, was chosen as urban site, whereas Siaya and Bondo districts in the north-west of Nyanza were chosen as rural sites (see Figure 1.3)

Soon after the discovery of the HIV virus in the early 1980s, observational studies suggested that people with an ulcerative STD might have a higher chance of contracting HIV. This insight created a renewed interest in the study of STDs and behavioural risk factors. Numerous studies have been carried out on these topics in Nairobi, through a collaboration of Kenyan, Canadian, Belgian and American researchers.[79] Three studies in Nairobi have focused on health care seeking for STDs.[82] These studies were all clinic-based, and said little about the health care seeking behaviour of the wider community. Therefore, we decided to conduct a community-based study on health care seeking behaviour for STDs in Nairobi.

Beginning of the 1990s, STD care in Nairobi was decentralised from 1 STD referral clinic to about 10 Nairobi City Council clinics. Providers and supervisors were trained in the syndromic approach to STD case management, and STD drug supply was assured.[62] Although STD rates in Nairobi have dropped soon after this strengthening of STD care in the formal sector,[62] the quality of STD care has not been evaluated in international literature. For this reason we have assessed the quality of STD care in the formal sector (public and private clinics, and pharmacies) as well as the informal sector (drugs shops, street vendors, and traditional healers) in Nairobi.

1.4 Research questions and outline of the thesis

The aim of this thesis is to deepen the understanding of important determinants in the heterosexual spread of HIV in Kenya, namely sexual risk behaviour, health seeking behaviour for STDS, and the quality of STD care. It further will assist in identifying effective prevention strategies to control the HIV epidemic. More specific, the following research questions were the basis of our research:

1. What is the sexual behaviour of current high-risk groups in HIV/STD transmission (sex workers, their clients and young people)? Are there differences between urban and rural areas?

2. What is the health care seeking behaviour of people with STD complaints?

3. What is the quality of STD case management?

The research questions reflect the steps in the process of sexual transmission of STD/HIV, and focus on several starting points for prevention interventions (see the concepts in italics in Figure 1.2). To answer the research questions, we made use of quantitative methods (structured survey interviews, sexual diary keeping, structured observations, and simulated patient visits) as well as qualitative methods (in-depth interviews, informal conversations, key-informant interviews, and focus group discussions).

Chapters 2 to 4 of this thesis address research question 1 and describe the sexual behaviour studies conducted in Nyanza. In **Chapter 2** we compare the sexual behaviour of female sex workers living in urban and rural areas in Nyanza province, and we compare their unsafe sex with clients and with regular partners through a cross-sectional study. The main method used was sexual diary keeping for two weeks by 63 sex workers. The diary data are supported with data from questionnaires and in-depth interviews. In **Chapter 3**, the focus is on the clients who have sex with the sex workers. We investigated the socio-demographic background and sexual risk behaviours of 64 clients through informal conversations in bars, nightclubs and lodges. Clients in Kisumu town are compared to clients in two rural districts of Nyanza province with regard to risk behaviour and reasons for (not) using condoms. **Chapter 4** focuses on the sexual behaviour of a more general high-risk group: young adults aged 15-29 years old. We assessed the sexual risk behaviour of about 600 young adults through face-to-face questionnaires, and we again compared urban with rural Nyanza regarding sexual debut, marriage, rate of partner change, and condom use.

Chapter 5 addresses research question 2 and describes the health care seeking behaviour of almost 300 people in Nairobi who had had complaints of an STD in the past year. Because this was a population-based survey, we had to interview almost 2000 persons to arrive at the 300 cases. People were questioned about whether or not they sought care,

how long they delayed seeking care, and their choice of health care provider(s). In the analysis men and women are compared with regard to these aspects, and with regard to reasons for (not) seeking care at a certain provider. Multivariate regression is used to predict care seeking.

Chapters 6 to 9 of this thesis address research question 3 and describe the studies on quality of STD care conducted in Nairobi. In **Chapter 6**, the design of the studies is explained, and an attempt is made to make a Nairobi-wide estimate of socio-demographic characteristics of providers and patients, on the basis of the data for the study sample. **Chapter 7** describes the quality of STD care among different types of providers in Nairobi. It focuses on correct history taking, examination, and treatment, and the correctness for all 3 aspects (the so called 'Prevention Indicator 6' as defined by the World Health Organization). To this end, 165 providers in the formal and informal health sector were interviewed, observed during 441 interactions with STD patients, and visited by a simulated patient (i.e., a research assistant posing as an STD patient, presenting with a standardised STD complaints and a history of unsafe sex). In **Chapter 8**, the quality of health education during STD case management in Nairobi is described, using the same methods as described in chapter 7. This chapter focuses on 'the four Cs', namely Condom promotion, Contact tracing education, Compliance education, and Counselling (regarding diagnosis, STD spread and HIV risk reduction). Providers are compared with regard to the type of facility they work in, their profession, and whether or not they attended an extra in-service course on STDs. In **Chapter 9**, the role of traditional healers in the management of STDs is described. Sixteen Nairobi healers were interviewed with regard to STD caseload, commonly seen STD complaints, type and duration of treatment, referral patterns, health education, and condom promotion.

In the General discussion (**Chapter 10**), the three research questions of this thesis are answered and commented on. The implications of our study results for HIV prevention and control in Kenya are discussed. Finally, conclusions and recommendations for control measures and for future intervention research are listed.

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2

Female sex workers and unsafe sex in urban and rural Nyanza, Kenya: regular partners are more important for HIV transmission than clients

Acknowledgements

Abstract

Background: Interventions for sex workers have focused on urban areas and have stressed the importance of condom use in commercial sex contacts.

Objectives: To compare the sexual behaviour of female sex workers in urban and rural areas in Nyanza province in Kenya, and to compare their unsafe sex with clients and with regular partners.

Design: Cross-sectional study among 64 sex workers (32/32 in urban/rural areas).

Methods: After a face-to-face interview, sex workers kept a sexual diary for 14 days.

Results: Most sex workers were separated/divorced and had one or two regular partners, who were mostly married to someone else. Sex workers in Kisumu town were younger and had started sex work at an earlier age than sex workers in Siaya/Bondo rural districts. Sex workers in town had more clients in the past 14 days than women in the rural districts (6.6 vs.2.4), and both had equal sex contacts with regular partners (4.7). Condom use with clients was fairly high (about 75%), but with regular partners a condom was used in less than 40% of sex acts. For both urban and rural areas, the mean number of sex acts in which no condom was used was higher for regular partners (3.2 and 2.8 respectively) than for clients (1.9 and 1.0 respectively).

Conclusions: Sex workers in urban and rural areas of Nyanza province practice more often unsafe sex with regular partners than with clients. Interventions for sex workers should also focus on condom use in regular partnerships.

Introduction

Commercial sex plays an important role in the spread of HIV/AIDS in Africa, especially in beginning epidemics.[1-3] Most research as well as interventions for sex workers have focused on (semi-)urban areas, because commercial sex is more prevalent in urban than rural areas and because urban sex workers usually have more clients than their rural counterparts.[4] There is limited information on commercial sex in rural areas.

Sex workers generally have many clients, which puts them at risk for contracting HIV at the start of their sex work career, and which puts their clients at risk as soon as the sex workers have become infected. Interventions targeting sex workers have therefore stressed condom use in commercial contacts.[5, 6] However, if sex workers consistently use condoms with their clients, the risk for HIV transmission is negligible. It is only the partners with whom they do not use condoms, who increase the risk for HIV transmission. Some studies among sexual partners of sex workers suggest that condom use with clients has become fairly high, but condom use with regular partners has remained much lower.[7-9] At

the same time, HIV prevalence among regular partners may be higher than HIV prevalence among clients.[10] Boyfriends and regular partners of female sex workers may therefore deserve more attention in HIV prevention strategies.

Catania and Weinhardt have described the methodological challenges faced by researchers to assess sexual behaviour.[11, 12] The most often used method to study sexual behaviour in Africa is the face-to-face interview, in which overreporting by men and underreporting by women is often a problem due to self-presentation and recall bias.[12, 13] Sexual diaries, also called coital logs, are less often used in sexual behaviour research.[14, 15] The diary procedure is supposed to collect more accurate information about sexual behaviour than recall measures, because daily recording minimizes effects of memory error.[11, 15, 16]

In this article we report the results of a cross-sectional study among female sex workers in Nyanza, a rural province in the west of Kenya. The aim was twofold: to compare sexual behaviour between urban and rural areas, and to compare unsafe sex with clients and with regular partners.

Methods

Our study took place in Nyanza, a densely populated province bordering Lake Victoria in the west of Kenya, which has the highest HIV prevalence rate in Kenya. Within Nyanza we selected Kisumu town (the third largest town of Kenya with an estimated 380.000 inhabitants) and, for comparison, the rural districts of Siaya and Bondo (together about 640.000 inhabitants).[17, 18] Siaya/Bondo districts were selected for two reasons: they are inhabited by the same ethnic group that also predominates Kisumu town, i.e. the Luo, and they have relatively many commercial sex activities ongoing, with Kenya's main highway passing through Siaya and some commercial fishing beaches being located in Bondo. The high mobility in the region, due to the highway and its location at Lake Victoria, may have contributed to the fast spread of HIV in Nyanza: in the late nineties, prevalence in Kisumu among adults aged 15-49 years was as high as 20% for men and 30% for women.[19] In the rural districts we included Siaya and Bondo town as well as villages where we expected commercial sex activities. In Siaya district we selected Ugunja and Sega, where long distance truckers often make an overnight stop. In Bondo district the study concentrated on Usenge, a fishing community on the shores of Lake Victoria, where women trade fish for sex.

With the aid of a community worker who was working for the Nyanza Provincial Medical Office, sex workers were identified in bars, night-clubs, hotels, restaurants, lodges, and streets in all these sites. Research assistants addressed the identified sex workers and tried to recruit them into our study: the women were asked to participate in a focus group discussion (FGD) and bring their peers (snowball method). After the FGD, the women were asked to come back for either a face-to-face questionnaire (rural districts) or an in-

depth interview (Kisumu town). They were subsequently asked to keep a daily sexual diary for a period of two weeks.

Two male and two female research assistants, all social scientists, received a five-day training on FGD, survey, and in-depth interview techniques, and on how to explain the use of the sexual diary. The aim of the focus groups was to build rapport and to get general information on the start of women's commercial sex career, type of partners, type of sex, condom use, coercion, and birth control. The survey focused on socio-demographic characteristics, frequency of commercial sex, details on the last 5 clients, condom use, experience of STD, and STD health care seeking behaviour. The in-depth interview covered roughly the same topics, but also focused on circumstances around the first commercial sex, reaching clients, negotiations on price and condom use, the influence of alcohol, and differences between clients and regular partners. Women in Kisumu participated in an in-depth interview and not in a survey, because they had often been studied with surveys and we expected survey-fatigue. Women were requested to keep a sexual diary in which they had to indicate on a daily basis each partner they had had sex with, the type of partnership (regular partner or client), the type of sex acts (vaginal, oral, and/or anal), whether or not a condom was used in each sex act, and the price that was paid. It was left to the women to decide whether a sexual partner was a regular partner or a client. The sexual diaries were collected weekly.

Data collection took place between February and April 1999. In total 64 female sex workers participated in the FGDs and face-to-face interviews (32 in Kisumu town and 32 in Siaya/Bondo districts.), and 63 kept a sexual diary for 14 days (1 woman in Kisumu was lost-to-follow-up because she left the area). After obtaining verbal consent from the sex workers, the FGD as well as the in-depth interviews were tape recorded and transcribed into full reports within one or two days and entered into MS-Word. Relevant aspects of the in-depth interviews were translated into numerical values and entered into SPSS version 9.0 for statistical analysis. The questionnaires and the sexual diaries were entered into Epi-info 6 and analysed using SPSS. Sex workers in rural and urban areas were compared by calculating Chi squared tests for categorical data and Wilcoxon W tests for continuous data that were not normally distributed.

Results

The sociodemographic and sexual behaviour characteristics of our 64 informants as reported in the questionnaire/in-depth interview are given in Table 2.1. Women in Kisumu town were younger than those in the rural districts (median 22 versus 26 years old). More than half of all women were separated or divorced. The vast majority had at least one regular partner, and a considerable proportion had two or more, especially in Siaya/Bondo (47%). Women in Kisumu slightly more often reported that sex work was their main source of income than women in the rural districts (78% versus 56%, p=0.06), but in all areas 88% of women self-identified as sex workers. Women in Kisumu started

Table 2. 1 Sociodemographic and sexual behaviour characteristics of 64 female sex workers in Kisumu town and Siaya/Bondo districts in Nyanza province, Kenya

Characteristic of female sex workers	Kisumu town (n=32)	Siaya/Bondo (n=32)	P-value
Age (yrs)			
Median (range)	22 (18-45)	26 (17-37)	<0.01[1]
Marital status			0.3[2]
Separated/divorced	47%	63%	
Single	50%	31%	
Widowed	3%	6%	
Number of regular partners			0.09[1]
0	13%	13%	
1	69%	41%	
2+	19%	47%	
Duration of living in this village/town			0.6[1]
1 year or less	38%	25%	
1-5 years	6%	38%	
>5 years	56%	38%	
Sex work main way of earning a living	78%	56%	0.06[2]
Self-identified as sex worker	88%	88%	1.0[2]
Age of starting sex work (yrs)			
Median (range)	18.5 (15-27)	22.5 (15-30)	<0.01[1]
Number of clients in the last 4 weeks			
Mean	21	2.5	<0.001[1]
Median (range)	10 (0-120[3])	2 (0-12)	
Place where clients are often met[4]			
Bar/restaurant	91%	97%	
Nightclub	56%	0%	
Street/bus stop	9%	28%	
Café/hotel	13%	13%	
Home	3%	19%	
Brothel	3%	0%	

[1] Mann-Whitney *U* test, [2] Chi-squared test.

[3] This maximum is a multiplication of the number of clients reported in last week, because the sex worker could not recall the exact number of clients in the last 4 weeks.

[4] More than one answer possible.

sex work at a younger age (medians 18.5 versus 22.5), and they reported many more clients during the last 4 weeks than sex workers in Siaya/Bondo (mean 21 versus 3).

In-depth interviews in Siaya/Bondo showed that half of the sex workers who ever moved residence, moved to their current residence because they were divorced, looked for work after their divorce, or tried to escape stigma after divorcing. The majority (84%) had children, who economically depended on them. The regular partners reported by the sex workers were mostly men married to somebody else, living in a different district, who

visited the women not very often and therefore had sex with them irregularly. When their regular partner was not around, the women saw clients. About one third of the regular partners were reported to be former clients, and over two thirds of women (71%) reported in the in-depth interviews that their regular partner(s) did not know that they were a sex worker. Most of these women said their partner would beat them if they found out about their profession. Regular partners were reported not to pay for sex directly, but to pay for house rent, dresses, household goods, school fees, medical bills, and food.

Table 2.2 shows the sexual behaviour of the urban and rural sex workers, as reported in the 14 days sexual diary keeping. The total number of reported sex acts was higher among women in Kisumu town than in the rural areas, because women in town had more sex with clients than women in rural sites (6.6 vs. 2.4). Sex with regular partners was equal in urban and rural areas (4.7 acts). Over the 14 days of diary keeping, women in rural Siaya/Bondo more often only saw regular partners than women in town (38% vs. 10%). Contrary to the in-depth interviews, the diaries showed that regular partners in Kisumu

Table 2.2 Sexual behaviour as reported in a sexual diary that was kept for 14 days, by 63 female sex workers in Kisumu town and Siaya/Bondo districts in Nyanza province, Kenya

	Kisumu town (n=31)	Siaya/Bondo (n=32)	P-value
Total number of sex acts[1]	355	226	0.01[2]
Mean number of sex acts in last 14 days			
With all partners	11.5	7.1	<0.001[3]
With regular partner(s)	4.7	4.6	0.8[3]
With clients	6.6	2.4	<0.001[3]
Type of sexual partners in last 14 days			0.01[2]
Both regular partners and clients	81%	63%	
Only regular partners	10%	38%	
Only clients	10%	0%	
Type of sex during each act			<0.01[2]
Vaginal	91%	93%	
Anal	5%	1%	
Oral	4%	3%	
Vaginal and oral	1%	3%	
Anal and oral	0%	1%	
Proportion of sex acts in which money was paid			
With all partners	90%	64%	<0.001[2]
With regular partner(s)	78%	48%	<0.001[2]
With clients	98%	94%	0.11[2]
Mean price paid per sex act[4]			
With all partners	491 Ksh	570 Ksh	<0.001[3]
With regular partner(s)	604 Ksh	560 Ksh	<0.001[3]
With clients	417 Ksh	583 Ksh	<0.001[3]

[1] Of all women together, [2] Chi-squared test, [3] Mann-Whitney *U* test, [4] In case money was paid.

paid money to their "girlfriends" in about three quarter of times they had sex with them; in Siaya/Bondo money was paid in about half of the cases. Clients paid money in 95% of cases. In case money was paid, regular partners paid as much as clients in the rural areas, but in town regular partners paid more than clients (p=0.03).

Condom use with clients was fairly high (about 75%), but with regular partners condoms were used in less than 40% of cases (Table 2.3). Therefore, most unprotected sex acts took place with regular partners, not only in the rural areas (2.8 versus 0.6 with clients) but also in town (2.9 versus 1.7 with clients). Only 1 in 5 to 10 women consistently used condoms over the 14 days of diary keeping. Consistent condom use was higher with clients (about 60%) than with regular partners (about 25%). During the 14 days of diary keeping, 40% of women never used a condom with their regular partners, versus 6% with clients. Women were more likely to never use a condom with their regular partner in case they only had sex with their regular partner(s) over the 14 days of diary keeping, than in case they 'simultaneously' saw clients (67% vs. 31%, p=0.015, results not shown).

Table 2.3 Condom use as reported in a sexual diary that was kept for 14 days, by 63 female sex workers in Kisumu town and Siaya/Bondo districts in Nyanza province, Kenya

	Kisumu town (n=31)	Siaya/Bondo (n=32)	P-value
Proportion of sex acts without a condom			
With all partners	41%	50%	0.04[1]
With regular partner(s)	64%	62%	0.8[1]
With clients	26%	27%	0.8[1]
Mean number of sex acts without a condom in the last 14 days			
With all partners	4.6	3.4	0.5[2]
With regular partner(s)	2.9	2.8	0.8[2]
With clients	1.7	0.6	0.2[2]
Always using a condom in the last 14 days			
With all partners[3]	24%	10%	0.2[1]
With regular partner(s)[4]	21%	25%	0.7[1]
With clients[5]	57%	60%	0.8[1]
Never using a condom in the last 14 days			
With all partners[3]	4%	0%	0.4[1]
With regular partner(s)[4]	39%	41%	0.9[1]
With clients[5]	7%	5%	0.8[1]

[1] Chi-squared test, [2] Mann-Whitney *U* test.

[3] For women who had regular partners as well as clients, n=25 for Kisumu and n=20 for Siaya/Bondo.

[4] For women who had regular partners, n=28 for Kisumu and n=32 for Siaya/Bondo.

[5] For women who had clients, n=28 for Kisumu and n=20 for Siaya/Bondo.

Discussion

In this study among female sex workers in Nyanza province, Kenya, we found that sex workers in Kisumu town were younger, they started sex work at an earlier age, and they had more clients than sex workers in Siaya/Bondo rural districts. Divorce seemed to be a risk factor for entering the sex business, as has been often reported in Africa.[20-22] Most sex workers had one or more regular partners, who were mostly married to someone else. Condom use was much higher with clients than with regular partners, and women had more unprotected sex acts with regular partners than with clients, even in Kisumu town where sex workers overall had more clients. The risk for HIV transmission between sex workers and regular partners seems therefore to be considerable.

There are several limitations to our study. The sample size is rather small, but even with these small numbers we were able to show significant differences between sex workers in urban and rural areas. Furthermore, our sample may not have been representative of all sex workers in the sampled villages/towns because we used snowball techniques, and the sampled villages/towns within Siaya/Bondo are not representative for the whole rural districts because we selected sites in which we expected commercial sex to occur (truck stop and fishing communities). The period of diary keeping of 14 days may have been rather short, but even within this short period we observed clear differences between urban and rural areas and between (unsafe) sex with regular partners and clients.

The found differences in sociodemographic characteristics and sexual behaviour between sex workers in urban and rural areas are consistent with findings from studies from Kenya and Cambodia, in which rural sex workers were older, had less clients, and earned less from sex work than sex workers in urban areas.[23, 24] In Cambodia, differences in age and duration of sex work suggested movement of sex workers out of cities into rural provinces as their careers evolve; women who aged and became infected moved out of cities into less competitive rural markets.[24] This may also be the case in our study: over 60% of sex workers in the rural areas lived less than 5 years in their current place of residence, and the majority had moved from other urban areas within the province.

The majority of sex workers in our study were separated or divorced, especially in the rural areas. Most of these women had one or more children that they needed to feed and cloth. For them, sex work was often the only way to earn some cash income to maintain their children. Micro financing and income generating projects may give these women the means to start earning money outside the sex business and eventually to leave it completely.

The sex workers in our study had more unprotected intercourse with regular partners than with clients. A parallel study amongst clients of the sex workers, which was part of the same research project as the sex worker study, revealed that regular partners are very high-risk partners. The majority of these men had unprotected sex with several regular sex worker partners simultaneously in the past year, besides having sex with one or more

casual/new sex workers.[25] That regular partners may be higher-risk partners than clients was confirmed in a study in Cotonou, Benin, in which the prevalence of HIV was twofold higher among boyfriends than among paying clients of the sex workers (16.1 versus 8.4%).[10] A study in Ghana showed the same pattern, with a HIV prevalence of 32% among boyfriends versus 13% among clients.[26] Thus, female sex workers may contribute more to HIV transmission by having unprotected sex with a limited number of high-risk regular partners, than by having mainly protected sex with a great number of medium-risk clients.[27]

In the sexual diary keeping it was left to the women to decide whom they considered to be a client and whom a regular partner. The fact that regular partners were reported not to pay for sex directly in the interview but they most often paid for sex in the diary, raises questions on whom exactly the women categorized as being a regular partner in the diaries. It seems as though most women have categorized a 'regular client' as being a regular partner rather than being a client. For example, 5 women reported in the interview not to have a regular partner, whereas in the diary they reported sex with a regular partner. Therefore, most regular partners in the diary are probably regular clients rather than boyfriends. This explains why regular partners in the diary were paying for most sex acts (57% of the sex workers in Kisumu were even paid for each and every sex act with their regular partner). It may also be that the payments that women received by their regular partner was not necessarily in exchange for sex, or not considered as such by the women. Another explanation is that some women do not make a clear distinction between a boyfriend and a regular client: "After having sex 3 or 4 times with a client he becomes a boyfriend". Some women reported trying to make regular clients feel like they were their boyfriends, to ensure continued financial and material support.

Because most men are perceived to be regular partners instead of clients, condom use is low. This is a general phenomenon which is observed all over Africa,[8-10, 20, 28, 29] Asia[30, 31] and Western countries.[32] The main reason for sex workers not to use condoms with their regular partners is 'trusting each other', which is less related to faithfulness than to regular financial support.[9, 25] Sex workers may loose their regular partners by proposing to use condoms, thereby jeopardizing a stable income besides emotional support.

Sex workers in our study reported relatively low numbers of clients, even in urban Kisumu. As a result of AIDS, there may have been a shift in the past decade from casual single-time clients towards regular partners, as was reported to have taken place in Tanzania where most of the sexual contacts of sex workers nowadays occur within long-term partnerships.[7] Since condom use is rare in these relationships, the shift from casual to long-term regular partnerships may actually have increased HIV transmission.

Although possible negative aspects of the diary method have been reported, such as the time, effort, and expense to administer and analyse them, and participant fatigue and reactivity during their use,[15, 33] our experience with the method was positive. Sex workers

easily understood the format, and all diaries were kept thoroughly and filled in properly. The women liked keeping the diaries and some even asked for more copies for their own 'business management'. The only problem we encountered was that some sex workers had to hide the diary from their regular partners. Another drawback was that the diary-format that we used did not allow differentiating between individual partners, i.e., we did not know how many different clients and regular partners the women had had sex with over the 14 days.

Other sex worker studies that compared sexual diaries with recall questionnaires have found a higher number of partners and sex acts in the diaries than in the questionnaires.[8,15] In our study, the number of clients reported in the diaries was double as high as the number of clients reported in the questionnaires for the rural areas (diary 2.4 per 2 weeks, versus questionnaire 2.5 per 4 weeks). However, for the urban area, the number of clients reported in the diaries was lower then the number reported in the in-depth interviews (diary 6.6 per 2 weeks versus in-depth interview 21 per 4 weeks). A limitation in this comparison is that the reports of the different methods reflect two different periods in time. The found differences could therefore reflect true differences rather than a methodological bias.

The findings of our study have clear implications for HIV control in Africa. First, HIV interventions targeting sex workers should be expanded to rural areas, to be able to control further generalisation of the HIV epidemic.[24] Second, HIV prevention programmes for sex workers should promote condom use in regular partnerships as much as in commercial partnerships. This issue constitutes a major challenge for prevention programmes targeting sex workers all over the world.[20] In Benin, HIV interventions targeted at sex workers and their clients resulted in a significant increase in condom use with clients, but condom use with regular partners remained very low (less than 20%).[34] A simple intervention of improving access to condoms in Zimbabwe lead to more protected sex episodes between sex workers and clients, but not with regular partners.[20] Thus, there is an urgent need to develop specialized educational materials and intervention strategies to address the potential increased risk of HIV/STD transmission between female sex workers and their regular partners.

What measures can be taken to improve condom use in regular partnerships? In a study of female sex workers in the Dominican Republic, multivariate analyses showed that the following factors were associated with consistent condom use with regular paying partners: environmental-structural support for condom use and HIV/STI prevention (e.g., from brothel owners), safe sex self-efficacy, and low perceived intimacy.[35] Because sex work in Nyanza province in Kenya is mainly bar-based, bar personnel may be trained to give environmental-structural support, e.g. by publicising meetings and distributing condoms and condom promotion materials.[21] Bar personnel could also be made responsible for ensuring that their establishment has ample supply of (free) condoms at all times.[21] Safe sex self-efficacy can be promoted through strategies such as peer education. It will be

impossible to change the perceived intimacy of relationships, but it may be possible in condom promotion activities to extend the definition of a high-risk relationship from casual partnerships to include multiple long-term partnerships.[7]

Much can be gained in HIV prevention if sex workers are willing and able to use condoms in regular partnerships, as is illustrated by the case of Senegal. The favourable time trends in HIV prevalence in this country were observed in the context of high rates of consistent condom use with both clients (98%) and regular partners (94%).[34, 36] In this era, in which the message to use condoms in commercial partnerships has reached most sex workers, it is time to move to the next step: promoting condom use in regular partnerships.

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3

Clients of female sex workers in Nyanza province, Kenya: a core group in STD/HIV transmission

Acknowledgements

Abstract

Background: Commercial sex plays an important role in the spread of HIV and AIDS in Africa, especially in beginning epidemics.

Goal: The goal was to study the sociodemographic characteristics and sexual risk behaviour of clients of female sex workers (FSWs) in Nyanza province, Kenya.

Study Design: In the town of Kisumu and the rural districts Siaya and Bondo, male clients of FSWs were identified in bars, nightclubs, and lodges. An informal conversation was held with 64 clients.

Results: The majority of clients were between 25 and 36 years old, were married, and had extramarital partners in addition to FSWs. Most clients had visited several (3–5) different FSWs in the previous year, of whom at least 2 were in long-term, steady client–FSW relationships. Clients visited FSWs an average of once or twice a week. Most clients were not consistently using condoms with FSWs; the main reason given was that they 'trusted' their steady FSWs.

Conclusion: Commercial sex in Nyanza frequently involves multiple steady relationships instead of rapidly changing onetime contacts. Information, education, and communication (IEC) campaigns aimed at risk reduction in commercial sex should promote condom use in steady FSW–client relationships.

Introduction

Commercial sex plays an important role in the spread of HIV/AIDS in Africa, especially in beginning epidemics.[1] The focus of most studies on commercial sex has been on female sex workers (FSWs), considered a core group in the spread of sexually transmitted diseases (STDs) and HIV.[2, 3] FSWs have often been identified as the main group at which preventive interventions should be targeted.[4] Promotion of condoms is the main intervention, but condoms have to be used by male clients. FSWs often do not have the power to negotiate safe sex without losing income or even risking physical abuse.[5] Several studies on FSWs have therefore stressed the importance of targeting condom promotion and other behavioural interventions at clients.[6, 7]

In order to develop successful interventions for clients of sex workers, it is important to know their sociodemographic background, their risk behaviour, and their underlying attitudes and norms, so that these can be taken into account. However, generally not much is known about clients, because they are difficult to identify and access. Some studies have focused explicitly on clients of FSWs, by addressing them in brothels just before or after they have sex with an FSW.[8–11] In such a setting, men are often open to discussing sexual

issues. However, this method is feasible only when commercial sex is brothel-based. Other studies have focused on truck drivers (who are known to frequently visit FSWs), thereby leaving out other groups of clients.[12–15]

In this article we report the results of a cross-sectional study of clients of FSWs in Nyanza, a rural province in the west of Kenya. The aim was to study their sociodemographic characteristics and sexual risk behaviour. Specific research questions were the following. How do clients' sociodemographic profiles and risk behaviours differ in urban and rural areas? Do clients have one-time contacts with different FSWs, or do they have steady FSWs? What is the level and consistency of condom use, and what are the attitudes and perceptions about safe sex? Because commercial sex in Nyanza is mostly not brothel-based,[16] we reached clients in the places where they normally meet FSWs, such as bars, nightclubs, lodges, and hotels, and discussed a set of standard questions through an informal conversation.

Methods

Our study took place in Nyanza, a densely populated province bordering Lake Victoria in the west of Kenya. Within Nyanza, we selected the town of Kisumu (the third largest town in Kenya, with an estimated 380,000 inhabitants) to compare it with the rural districts of Siaya and Bondo (with a combined population of 640,000).[17, 18] The Siaya and Bondo districts were selected because they are inhabited by the same ethnic group that also predominates in Kisumu, i.e., the Luo. The two rural districts are located in the northwest of the province, where Bondo borders Lake Victoria. The main highway that links Kenya with Uganda, Rwanda, and Zaire passes through Kisumu as well as Siaya. The high mobility of people in the region due to the highway and its location at Lake Victoria may have contributed to the fast spread of HIV in Nyanza: in the late 1990s, prevalences of HIV in Kisumu among adults aged 15 to 49 years were as high as 20% for men and 30% for women.[19]

In the Siaya and Bondo districts, we included the towns of Siaya and Bondo as well as villages where we expected commercial sex activities. In the Siaya district, these were Ugunja and Sega, where long-distance truckers often make an overnight stop. In the Bondo district this was Usenge, which is a fishing community on the shores of Lake Victoria. In all these sites, places where FSWs meet their male clients were identified, such as bars, nightclubs, hotels, restaurants, and lodges. An attempt was made to include small, low-class bars as well as large, high-class hotels (in Kisumu). Some of these places were identified with the assistance of FSWs who participated in a parallel study, which was part of the same research project. This FSW study was complementary to the client study and took place simultaneously, in the same venues.

Two male and two female research assistants were trained to have an informal conversation with potential clients in the identified locations. The conversation was to

cover some standard open questions, but other topics were to be discussed further if the situation allowed it. The research assistants went into the identified places, often on Friday or Saturday nights, and started an informal conversation with a customer, often buying him a drink. Most of these men were selected by convenience sampling, whereas some were pointed out as being clients by the FSWs of the parallel study. After talking about general subjects, the research assistants slowly shifted the conversation toward the topic of commercial sex. The men were asked whether they ever had visited an FSW. It was left up to the respondent to consider whether a sex partner was a sex worker (in Africa the distinction is often unclear because financial support plays an important role in every sexual relationship.[20]

When a man said he had ever visited an FSW, he was considered an eligible respondent. This meant that the informal conversation was continued, focusing on the standard open questions and topics that the research assistants had memorized. In the conversation, a distinction was made between (1) marital partners; (2) extramarital or nonmarital partners, defined as those in any ongoing non-commercial and non-spousal relationship, including steady as well as casual girlfriends; and (3) FSWs, defined according to the respondent's own definition as any contact based on commercial exchange, including one-time casual contacts as well as ongoing, steady FSW relationships.

Data collection took place between February and April 1999. Short notes were made as soon as possible after the informal conversations. These notes were transcribed into full reports of the whole conversation within 1 or 2 days and stored in computer files generated with Microsoft Word (Microsoft, Redmond, WA). Subsequently, relevant aspects of the stories were translated into numerical values by two independent investigators (H.V. and O.E.). Discrepancies were resolved by discussion and consensus; the final numerical data were recorded with Epi Info software, version 6.2 (Centers for Disease Control and Prevention, Atlanta).

Clients in rural and urban areas were compared by means of Chi-squared tests for categorical data, Jonckheere–Terpstra tests for ordinal data, and Wilcoxon W tests for continuous data that were not normally distributed, with use of SPSS, version 9.0 (SPSS, Chicago, IL), and SAS, version 6.12, TS level 0.060 (SAS Institute, Cary, NC). Multivariate logistic regression analysis was used to estimate determinants of consistent condom use. Qualitative information that could not be translated into numerical values was analysed thematically.

Results

In total, 64 clients were studied: 32 in Kisumu and 32 in Siaya and Bondo combined. Of these 64 clients, 15 (23%) were pointed out as clients by the sex workers of the parallel FSW study. The informal interviews with the clients were held in 38 different establishments (bars, hotels, clubs, lodges), of which 19 were in Kisumu, 10 in Siaya, and 9

in Bondo. In each establishment, between 1 and 3 clients were addressed, whereas the total number of customers present at the site varied from 1 to 10 in rural sites and 1 to 15 in urban sites. Although research assistants did not keep exact records of the number of noneligible men (i.e., men who never had visited an FSW), they retrospectively determined that about three quarters of all men whom they initially addressed reported to have ever been a client of an FSW.

The men were generally quite open to discussing sexual matters with the research assistant, especially after they informally discussed other, less private, topics. The offered drink facilitated this process. The research assistants managed to discuss the standard as well as the optional topics with all respondents. The conversations lasted an average of half an hour and were conducted in Dholuo, Kiswahili, and sometimes English.

Sociodemographic characteristics

The age of clients ranged from 20 to 58 years, with a median of 31 years; half of the clients were between 25 and 36 years old (Table 3.1). Three quarters of the clients were married; half of these married men had one or more extramarital non-commercial partners (mean, 1.9), besides having relations with FSWs. More men in Siaya/Bondo had extramarital non-commercial partners than in Kisumu (p=0.04). Of the 16 unmarried men, more than half had no partner (girlfriend) at all. More than 80% of men lived in the town where they were interviewed, whereas 6% lived outside Kenya. The non-residents mostly visited the town where they were interviewed because of their work (8 of 11; half of them were truck drivers).

Clients in Kisumu had more education than in Siaya/Bondo (p=0.001), but this reflects a predictable difference normally found between urban and rural areas. When clients in our study were compared with the general male population, the clients in Kisumu had a much higher educational level (84% of clients aged 25–34 years had a secondary or tertiary education, compared with 44% of the census males of the same age range; p=0.001).[21] For Siaya/Bondo there was no difference between clients and the general male population aged 25 to 34 years (33% versus 32% had a secondary or tertiary education; p=0.9).[21]

Clients' occupations could be categorized in four main groups (Table 3.1). The first is the qualified professionals such as teachers, policemen, bank clerks, advocates, or engineers, who earn enough money to frequently visit FSWs. This group was much larger in Kisumu than in the rural areas (p=0.01), which is in accordance with clients' higher education in Kisumu. In Siaya and Bondo, truck drivers and fishermen are two large, mobile occupational groups who can also afford to visit FSWs: truck drivers have fairly high wages, which they sometimes double by selling products on the way, whereas fishermen have very high incomes (up to $5,000 [U.S.] per month) during the main fishing season. These three groups of clients usually paid between $5 and $50 (U.S.) for a sexual encounter, besides buying drinks and, depending on the duration of the relationship, food,

Table 3.1 Sociodemographic characteristics of clients of female sex workers in Nyanza province, Kenya

Characteristic	All clients (n=64)	Town of Kisumu (n=32)	Siaya/Bondo districts (n=32)	P-value
Age (years)				0.40^1
Median	31	31.5	30	
Range	20-58	20-58	20-50	
Marital status				0.64^2
Married (polygamous)	75% (9%)	72% (9%)	78% (9%)	
Single	16%	19%	13%	
Divorced/separated	8%	6%	9%	
Widowed	2%	3%	0%	
Extramarital partners (of married men, n=48)				0.04^1
0	50%	65%	36%	
1	29%	22%	36%	
2, 3	15%	9%	20%	
4, 5	6%	4%	8%	
Non-marital partners (of non-married men, n=16)				0.22^1
0	56%	43%	67%	
1	19%	14%	22%	
2, 3	25%	43%	11%	
Residence				0.32^2
Town where interviewed	83%	88%	78%	
Elsewhere	17%	13%	22%	
Educational level				$<0.01^3$
None or primary not completed	13%	6%	19%	
Primary	33%	16%	50%	
Secondary	30%	38%	22%	
Tertiary	25%	41%	9%	
Occupation				$<0.01^2$
Qualified, professional	38%	59%	16%	
Truck driver	19%	9%	28%	
Fisherman	9%	0%	19%	
Bar/hotel/lodge worker	25%	19%	31%	
Other	9%	13%	6%	

[1] Wilcoxon *W* test, [2] Chi-squared test, [3] Jonckheere-Terpstra test

clothes, or rent for their steady FSW(s). A fourth large group, mainly in Siaya and Bondo, were clients whose profession brings them into close contact with FSWs, such as bartenders, cooks, and cashiers in hotels and lodges and musicians in bands that play in bars (Table 3.1). When their work is over, these men often leave with sex workers who 'park' in their establishment but have not succeeded in hooking a client for the night. As one man related, "I meet a lot of sex workers through my work selling lipsticks, earrings, and other makeup articles at nights in bars. We finish work at the same time past

midnight, and I meet the ones who did not get clients to go with. They are cheap, especially when they have a house where I can sleep." This group of clients usually paid as little as $0.50 to $2 (U.S.) per sexual encounter (besides paying for beers, a meal, or a room in a lodge).

Sexual risk behaviour

The median age of first sexual contact with an FSW was 24 years (Table 3.2). This is, on average, approximately 8 years later than the clients' sexual debut, which is around 16 years (n=15). For the majority of respondents, their most recent sexual contact with an FSW was < 1 week previously, and mostly this contact was with a steady or previously visited FSW. Condoms were used in 56% of the most recent sexual contacts with a sex worker; this proportion was higher in Kisumu than in Siaya/Bondo (69% versus 44%; p=0.04).

More than half of the clients had had sex with three to five different FSWs in the previous year (some mentioned 'several' without being able to give a more precise figure, Table 3.2). When asked about the usual frequency of visiting a sex worker, the majority said once or twice a week. Clients in Siaya/Bondo more often visited an FSW than did clients in Kisumu (median, 2.0 versus 1.0 per week; p=0.06). This high frequency, combined with the relatively low number of FSWs visited in the previous year, suggests that most clients had steady FSWs with whom they had an ongoing relationship for at least a few months. Indeed, when clients were asked about whether they had any steady or previously visited FSWs as partners, more than two thirds said they had two or more steady FSWs in the previous year, mostly simultaneously. Clients in Siaya/Bondo had more steady FSWs in the previous year than clients in Kisumu (p=0.04). The duration of steady relationships with FSWs varied from several weeks or months to several years (the maximum was > 5 years).

Some clients financially maintained their steady FSWs on a regular basis, instead of paying them per sexual encounter. Four clients said that they paid the rent for their steady FSWs (each maintained three FSWs), and one client said that he paid his lady "between $40 and $60 [U.S.], *depending on the problem,"* thereby indicating that the financial support was based not so much on sexual services rendered but on the personal financial problems of the sex worker. Thus, some clients had relationships with steady FSWs that much resemble 'normal,' non-commercial steady relationships (paying for rent, food, and financial obligations is common practice in a steady or spousal relationship). However, even in these cases, clients seemed to make a clear distinction between (extramarital) girlfriends and steady FSWs: "I do not like to call these ladies sex workers, but I agree that they have sex only for commercial benefits and are different from my two girlfriends who love me even without money."

About half of the clients mentioned that they had had sex in the previous year with a casual or new FSW (Table 3.2). Not only were sex workers with whom the clients had a

Table 3.2 Sexual risk behaviour of clients of Female Sex Workers (FSWs) in Nyanza province, Kenya

Variable	All clients (n=64)	Town of Kisumu (n=32)	Siaya/Bondo districts (n=32)	P-value
Age (years) at first sexual contact with an FSW				0.27[1]
Median	24	24	23	
Range	17 – 38	18 – 38	17 – 35	
Last previous sexual contact with FSW was				0.16[1]
Last week (1-6 days ago)	52%	44%	59%	
Last month (1-3 weeks ago)	16%	13%	19%	
Last year (1-12 months ago)	33%	44%	22%	
Median no. of days ago	6	9	4	
Last previous sexual contact with an FSW				
Steady FSW	70%	66%	75%	0.41[2]
Condom used	56%	69%	44%	0.04[2]
Total no. of different FSWs visited previous year[4]				0.86[3]
1, 2	25%	26%	25%	
3-5 or several	51%	52%	50%	
6-10 or many	21%	19%	22%	
11+	3%	3%	3%	
Usual frequency (per week) of visiting an FSW[5]				0.06[1]
Less than once	34%	41%	28%	
Once to twice	32%	37%	28%	
More than twice	34%	22%	45%	
Median times	1.3	1.0	2.0	
No. of steady FSWs in previous year (simultaneously)				0.04[3]
0	16%	22%	9%	
1	16%	22%	9%	
2, 3, or several	52%	44%	59%	
4-6 or many	17%	13%	22%	
No. of casual/new FSW partners in previous year[6]				0.22[3]
0	48%	43%	53%	
1	18%	17%	20%	
2, 3, or several	23%	30%	17%	
4+ or many	10%	10%	10%	
Consistency of condom use with FSWs				0.04[3]
Always or usually	45%	56%	34%	
Sometimes (i.e., with some FSWs)	13%	13%	13%	
Rarely (i.e., only first time or with new FSW)	25%	22%	28%	
Never	17%	9%	25%	

[1] Wilcoxon *W* test, [2] Chi-squared test, [3] Jonckheere-Terpstra test, [4] n=63, [5] n=56, [6] n=60

one-time contact regarded as 'new FSWs', but so were sex workers with whom they had a few sexual contacts. Clients generally believed that new FSWs become steady ones after three or four sexual contacts, usually over a period of approximately 2 to 4 weeks.

More than 40% of clients rarely or never used condoms with sex workers (Table 3.2). The clients who sometimes used a condom did so with some of their FSWs but not with others; the men who rarely used a condom did so only at the first encounter with a new sex worker. Clients in Kisumu more often used condoms than those in Siaya/Bondo (p=0.04), which is in accordance with clients' reports on condom use during the most recent sexual contact with an FSW.

Who are the clients who use condoms consistently (i.e., always or usually)? Multivariate logistic regression analysis of all the variables mentioned in Tables 3.1 and 3.2 showed that consistent condom users have a higher level of education (odds ratio, 2.8; 95% CI, 1.4–5.3). The greater education of clients in Kisumu explains why they more often use condoms than clients in Siaya/Bondo. Furthermore, analysis shows that married men with no extramarital partner are more consistent condom users than married men who have at least one extramarital partner (odds ratio, 5.4; 95% CI, 1.4–21.3; unmarried men do not differ significantly from either group of married men). Clearly, the men with extramarital partners play an important role in HIV/STD transmission because their condom use is low with FSWs (and negligible with wives and girlfriends).

Reasons for sexual risk behaviour

The main reason for inconsistent condom use with FSWs was the fact that clients 'trust' their steady FSWs (other reasons are listed in Table 3.3). The meaning of the concept *trust* seemed to vary greatly. Only a minority believed that they were the only client ("I think she is faithful"), and maintaining an FSW financially was sometimes seen as a guarantee for faithfulness ("I maintain my two sex workers so that they cannot go with any [other] men"). For others, trusting their FSWs meant (1) believing they did not have an STD ("I trust them [and] think they are clean, without STDs"); (2) knowing each other for a while ("After the first time [having] sex with a sex worker, I do not use condoms anymore, because by then I have known the lady well and an element of trust is developed"); or (3) believing they are the only client with whom she does not use condoms ("My five steady sex workers treat me as a regular boyfriend, not a client; they assure me that they cannot sleep with a client without a condom, but they don't want to use a condom with me because they love me and want to give me maximum satisfaction"). The fact that some clients recently had been infected with an STD by an FSW whom they trusted indicates that the women had unprotected sex with other men.

Prevention of STDs was more often mentioned than prevention of AIDS as a reason for condom use (Table 3.3). Of all clients, only 13 (20%) mentioned a fear of HIV/AIDS. Four clients did not fear AIDS because "people die anyway" or because they believed they were immune (being still alive after so many years of unsafe sex).

Table 3.3 Main reasons given by clients of Female Sex Workers (FSWs) in Nyanza province, Kenya, for not using or using condoms with FSWs, and safe-sex behaviour adopted by clients

	Percentage of clients
Main reasons for not using condoms with FSWs (n=40)[1, 2]	
Trusting steady FSW	68
Condoms reduce pleasure	15
Condom burst	15
Women do not like it	15
Closely monitors behaviour of steady FSW	15
Not necessary if woman looks healthy	13
Drunkenness	10
Belief that condoms do not protect against HIV	10
Main reasons for using condoms with FSWs (n=30)[2, 3]	
Does not trust FSW	27
FSW is a new (not a steady) partner	27
To prevent STDs	27
Does not want to infect wife	20
Has had an STD	17
To prevent AIDS	13
Safe-sex behaviour (n=64)[2]	
Effective strategies	69
Using condoms[4]	67
Limiting the number of FSWs	11
Having safe sex with an FSW instead of unsafe sex with steady girlfriend(s)	3
Ineffective strategies	13
Having sex only with steady FSWs (thinking they can be trusted)	9
Having sex only with FSWs who are new in town (assuming them to be uninfected)	3

[1] These are all 64 clients minus 23 who always use condoms and minus 1 (missing data).

[2] Some clients gave more than one reason or reported more than one behaviour.

[3] These are all 64 clients minus 11 who never use condoms and minus 23 (missing data).

[4] All clients were included who always or usually used condoms with FSWs, even if they did not explicitly mention condoms as a risk-reduction strategy.

The conversations indicated that 69% of all clients performed some kind of safe-sex behaviour. The most common risk-reduction strategy was using condoms (Table 3.3). Some clients mentioned that they have sex with only a limited number of FSWs or, in contrast, have safe sex with FSWs instead of unsafe with steady partners: "I am afraid to get steady with a lady because she will want to marry me, and she may be sick with HIV/AIDS. For this reason I try to dodge the ladies and prefer seeing sex workers with whom I can use condoms." A few clients had misconceptions about safe-sex behaviour and adopted ineffective or adverse behaviours, which actually increased their risk of infection (Table 3.3). Only five clients had really changed their behaviour over time as a result of the perceived threat of HIV/AIDS. Some clients indicated that they often had the wish to decrease their visits with FSWs, but alcohol mostly interfered with these plans:

"Sometimes I go to a bar to take two beers and leave, but later I end up taking more and the appetite for women falls on me. If I happen to have some money I have to go with a lady."

We made a distinction between clients' reasons for visiting FSWs (sex drive versus external circumstances; Table 3.4). The latter are more pertinent to the prevention of HIV/STDs, because they can be seen as risk factors to be addressed in interventions.

The most important external circumstance associated with having sex with FSWs, mentioned by 38% of clients, was making long or frequent journeys away from home. This mobility is closely linked to the clients' occupation: 8 of the 24 mobile clients were truck drivers (or loaders), 5 were fishermen, 3 played in a band that travels, and the remaining 8 also had jobs involving travel (sales agent, consultant, engineer). Most mobile clients also regularly visited FSWs in other towns or countries. For instance, all truck drivers indicated having FSWs along the routes they frequent: "It takes me 3 months to pick goods from Mombasa to deliver in Burundi. I cannot sincerely survive all this time without having a woman along the routes, so I have a sex worker in Mombasa, one in Kisumu, and one in Kampala. These are the points where I stop for one or sometimes even several weeks, while waiting for customs clearance." Of all 64 clients, 44% indicated they also regularly have sex with FSWs in other places: 25% within Nyanza Province, 11% in other Kenyan provinces, and 8% in other countries such as Uganda, Tanzania, Zaire, Rwanda, Sudan, and Burundi. It is not surprising that mobility was mentioned more often by clients from Siaya/Bondo than from Kisumu as a reason for visiting sex workers (p=0.02), because truck stops and fishing villages were selected as the rural areas for study.

Other important reasons for visiting FSWs were having an occupation that brings men into close contact with FSWs or having a lot of money (as described earlier). Fishermen also mentioned that life at the fishing beaches is an environment that stimulates commercial sex. Especially during peak season (when fishermen earn loads of cash), the beaches attract many ladies, and having spent 1 or 2 weeks on the high sea makes the men have a great urge for sex. Some fishermen had FSW partners throughout the landing beaches, and they were well aware of the risks: "Beach life is very hectic and risky, as the only two major things happening here are fishing and sex. I think that not one single lady of 12 years or older in this place is still a virgin; many teenagers here are already polluted, as they venture into sex for money at very young ages."

Another reason often mentioned for having sex with FSWs was not having other opportunities for sex, i.e., living far away from a wife or girlfriend, being single or separated, or having a wife who is pregnant (Table 3.4). Peer pressure (from colleagues and bar friends, for example) was also a trigger for visiting sex workers, as was alcohol use. Furthermore, three clients mentioned that they had sex with FSWs because it is less expensive than maintaining a steady girlfriend, indicating that there is a considerable exchange component involved in non-commercial relationships as well.

Table 3.4 Main reasons given by clients of Female Sex Workers (FSWs) in Nyanza province, Kenya, for visiting FSWs (n=64)

Reason	Percentage of clients
Internal drive/reason[1]	
Lust/excitement/fun; to conquer women	38
Wife is not enough for sexual satisfaction	22
FSWs perform better sexually	11
No obligations towards FSWs	11
Easy/convenient sex; always available	9
External circumstance/reason[1]	
Making long journeys away from home; being mobile	38
Frequent contact with FSWs through job	17
Wife/girlfriend lives far away	16
Fishing/beach environment stimulates commercial sex	9
To get admiration from friends; peer pressure	9
Alcohol increases lust	8
Being single/separated	8
Having a lot of money	8
FSWs are less expensive than maintaining a steady girlfriend	5
Wife is pregnant	5

[1] Some clients gave more than one reason.

Discussion

This study of 64 clients of female sex workers in Nyanza province in Kenya revealed that clients are mostly married men, often with extramarital relations, who have a mobile or highly paid job or are in close contact with FSWs in their working situation. They have very high-risk sexual behaviours, combining a high frequency of visiting steady FSWs and low condom use. The clients on average had had 6.2 sex partners in the previous year, including wives, extramarital partners, girlfriends, steady FSWs, and casual FSWs, in different towns, provinces, and even countries. Thus they have large sexual networks, linking groups of women who otherwise are socially and spatially isolated. Therefore, clients in Nyanza province can be regarded as an important core group in the transmission of HIV/STDs[3, 22] and not just as a bridge population that connects FSWs with the low-risk group of wives.[23] This is even more salient in Siaya/Bondo, where clients' behaviour was higher-risk than in Kisumu (more extramarital relations, more FSWs, lower condom use, and higher mobility).

The most important reason for not using condoms was trusting their steady FSWs. This perception suggests that there is more risk of STD/HIV infection from steady versus one-time FSW–client relationships. This finding was confirmed by the parallel FSW study, which was part of the same research project. Sexual diary–keeping showed that FSWs (n=63) in Kisumu and Siaya/Bondo had more unprotected contacts with regular partners

or regular clients than with non-regular clients in a 14-day period (mean, 2.8 versus 1.1; p=0.002). The FSW study also showed that sex workers had the same risk patterns and attitudes as their clients: besides one-time contacts, they mostly had several regular clients or partners with whom they did not use condoms because they trusted them. Thus, both clients and FSWs acknowledged their own unsafe sex but tried to justify it by assuming that their partners would have safe sex with others.

We know of only a few other studies in which (potential) clients were interviewed at bars or discos where FSWs worked.[24, 25] Our study showed that the method of addressing men through an informal conversation in entertainment places is feasible. The informal setting of the bar, the initial conversation about any topic, and the offered drink were efficient means of building rapport. In fact, we were surprised to find that so many men (about three quarters of those addressed) were open about ever having visited a sex worker. This can be explained partly by the fact that FSWs pointed out 23% of the clients. These clients did not differ significantly in sexual behaviour parameters from the other clients; thus, they did not introduce any selection bias in comparison with the clients who just happened to be present in the drinking establishments. However, research assistants may have been biased in addressing mainly those men who looked or behaved like potential clients.

Still, we believe it is likely that a considerable number of clients would have denied ever having visited an FSW if they had been addressed in a household survey. This could explain why a large survey in Kisumu showed that only 0.4% of men aged 15 to 49 years (n=829) reported having had sex with a sex worker in the previous year using the local term for FSW.[16] Our study findings suggest that men in that survey underreported their involvement in commercial sex.

To what extend can the studied clients be seen as representative of the whole client population in Nyanza? Our study sampled men in bars who happened to be clients, and we do not know how representative this group is of all clients of FSWs. We may have missed clients who visit an FSW at her house without passing through a bar or lodge, which sometimes happens in steady FSW–client relationships. This would mean that the frequency rate we noted for sex with steady FSWs underestimates that for the entire client population.

However, clients who often visit bars, clubs, or lodges had a greater chance of being included in our study than those who rarely visit these places (frequency-biased sampling). Because visiting such places is likely to correlate positively with visiting sex workers, the frequency of sex with FSWs that we noted would overestimate that in the entire client population. Furthermore, our findings cannot be generalized to client behaviour throughout the Siaya and Bondo districts, because we selected semi urban sites and villages in which we expected commercial sex to occur (truck stops and fishing communities).

In comparison with those in some other studies of clients of FSWs in sub-Saharan Africa, clients in our study were slightly older, were more often married, and more frequently had

extramarital partners.[7, 8, 24, 26] The high frequency of visiting sex workers was comparable to that in Zimbabwe (mean, 7.4 times per month), where clients' most recent commercial sex visit was also usually with a steady FSW.[24] Condom use in the most recent act with an FSW in our study was comparable to that in Zimbabwe, Benin, and Gambia but lower than in Ivory Coast, where condom use with FSWs is legally compelled. [7, 8, 24, 26] A study in Tanzania among truck-drivers also found that condom use with regular or steady FSWs is very low, because regular sex workers are treated as wives, with whom using a condom is unacceptable because it tends to signal a lack of trust.[27] This finding is confirmed by studies among sex workers: FSWs rarely use condoms with their boyfriends or regular partners. [6, 7, 14, 28, 29] When a distinction is made between regular and one-time clients, they use condoms less often with regular clients than with one-time clients, but more than with boyfriends.[11, 15, 30] The comparisons show that it is common in sub-Saharan Africa for clients to have steady FSWs and that this is often linked with low condom use.

The findings of our study have various implications. Because commercial sex in Nyanza is bar-based (instead of brothel-based), interventions focusing on clients should take place in bars, nightclubs, and lodges.[31] We found that a large proportion of clients are men who work in these places, such as bartenders, cashiers, and musicians. If they were to become involved in peer education programs, they not only could ensure the distribution of condoms and information to customers but also would become more aware of their own risk behaviour.[6, 8, 24] Because clients are often truck-drivers or fishermen, successful peer education programs among truck-drivers[13, 14, 27, 32] should be copied and extended to fishermen or fish markets, especially during the peak fishing season.[33, 34]

Educational materials and messages should be developed that stress the importance of condom use in steady and ongoing FSW–client relationships.[35] Clients (and sex workers) should be made aware of their risks and should be convinced to take the responsibility to use a condom, instead of relying on the faithfulness of their partner. Despite the fact that condoms named 'Trust' have been developed in Kenya through a social marketing program, condoms are still widely associated with unfaithfulness and mistrust. Information, education, and communication (IEC) campaigns should therefore include advertising condom use as a sign of taking responsibility and protecting a partner (be it a wife, girlfriend, or FSW).

During our study, research assistants were often asked by clients to provide them with condoms, which indicates they are still not widely available. Bars, nightclubs, discos, hotels, and lodges should therefore have a sufficient supply of free condoms at all times. Another effective strategy might be to have free condoms in the rooms of lodges where FSWs take their clients to spend the night.[36]

In conclusion, this study in Nyanza province in Kenya revealed that clients of FSWs engage in high-risk behaviour by maintaining several steady FSWs, with whom they often do not use condoms. Interventions therefore should target clients in bars, nightclubs, and

lodges and should focus on convincing them to use condoms, with casual as well as steady FSW partners.

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4

Sexual behaviour is more risky in rural than in urban areas among young women in Nyanza province, Kenya

Acknowledgements

Abstract

Background: HIV/sexually transmitted disease interventions in sub-Saharan Africa have largely been focused on urban areas, where sexual behaviour is supposed to be more risky than in rural areas.

Goal: The goal of this study was to measure sexual risk behaviour among young adults in Nyanza province in Kenya and to compare rural and urban areas.

Study: In a cross-sectional study, 584 household members aged 15 to 29 years in Kisumu town and the rural districts Siaya and Bondo were selected by multistage random sampling and were administered a face-to-face questionnaire.

Results: For women, sexual behaviour was more risky in rural than in urban areas, also after adjusting for sociodemographic differences. Rural women reported less frequently being a virgin at marriage, a higher number of lifetime partners, and less consistent condom use with non-spousal partners. For men, sexual risk behaviour was equally high in urban and rural areas.

Conclusions: The potential for further HIV spread in rural Nyanza is large. HIV/sexually transmitted disease interventions should be expanded from urban to rural areas in Nyanza.

Introduction

HIV epidemics in sub-Saharan Africa had their origin in urban areas. Urbanization in the 1970s and 1980s could well have been a major factor determining the onset of population-wide spread of the (long pre-existing) HIV virus. In the urbanization process, many young adult males went to towns to look for employment. In growing cities like Nairobi, the preponderance of men over women, the lack of formal employment for women, and the social disruption resulting from the large number of migrants resulted in commercial sex to an extent not known before.[1, 2] During this period, HIV started to spread within and between urban centres, through mobile 'core-groups' such as truck drivers and commercial sex workers, along the main trucking routes.[3, 4] From urban centres, HIV slowly spread into rural areas, through the sexual mixing of urban and rural residents by return migration.[1, 5]

HIV/sexually transmitted disease control programs in sub-Saharan Africa have largely focused on (peri-)urban areas, because HIV prevalences in urban areas are mostly higher than in neigh-bouring rural areas,[6–10] and HIV interventions are more cost-effective in densely populated sites.[11] It has been questioned whether HIV prevalence in rural areas in time will level up to those of the urban sites. Some think that higher levels of HIV in urban areas simply reflect an earlier start of the epidemic.[7, 10] Others believe that rural

prevalences will remain lower, because of less risky sexual behaviour in rural areas as compared with urban areas with their commercial sex, nightlife, opportunities for casual sex, and their less strict cultural rules toward sexual relationships.[12, 13] However, not many studies have focused on the comparison of sexual behaviour in urban and rural areas.[10] Our study took place in Nyanza, the densely populated province in the west of Kenya which is most affected by HIV. The province is located on the border of Lake Victoria and is crossed by the highway that links Mombasa seaport with Uganda, Rwanda, Burundi, and the Democratic Republic of the Congo. The high mobility in the region could have contributed to the fast spread of HIV in Nyanza. In its capital Kisumu, the third largest city in Kenya, HIV among pregnant women has risen from 19% in 1990 to 35% in 1997.[14] A recent population-based study showed that HIV prevalence among the general population in Kisumu was 20% for men and 30% for women; in the age group 15 to 19, it was 4% for boys and as high as 23% for girls.[15] There are no population data on HIV prevalence in the rural areas of Nyanza.

In this study, we have investigated the sexual risk behaviour of young adults in Nyanza province. The aim of the study was 2-fold: to measure sexual behaviour that puts young adults aged 15 to 29 at risk of HIV infection, and to compare urban with rural areas. To this end, we compared Kisumu town, with around 200,000 inhabitants,[15] with the rural districts of Siaya and Bondo (recently subdivided from 1 district called Siaya), with 640,000 inhabitants.[16] The latter 2 districts are located in the northwest of the province where Bondo borders Lake Victoria. The main highway passes through Kisumu as well as Siaya. A recent study investigated sexual behaviour in Kisumu,[17] but we are not aware of studies of sexual risk behaviour in the rural areas of Nyanza.

Methods

In this cross-sectional study in Nyanza province, we compared Kisumu town with the rural districts of Siaya and Bondo, which were selected because they are inhabited by the Luo ethnic group that also predominates in Kisumu. Multistage random sampling was used to select households. In the rural districts, 6 divisions were randomly sampled (Ugunja, Ukwala, Yala, and Karemo in Siaya district and Bondo and Rarieda in Bondo district), whereas in Kisumu town, the division that encompasses the town (Winam) was the starting point. In each division, we subsequently sampled: locations, sublocations, villages and subvillages (in rural areas) or residential areas called estates (in urban areas), and households. All members between 15 and 29 years of age who usually live (eat/sleep) in the sampled households were considered eligible. Three repeat visits were made to find eligible household members who were initially absent; learners who board at school were revisited during holidays or school breaks. After obtaining verbal consent, face-to-face questionnaires were administered by same-sex research assistants who were slightly older than the respondents. The 8 research assistants, most of whom were social scientists, had received 5 days of training on interview techniques and on how to handle the

questionnaire. The median duration of the interviews was 2 hours. For adolescents aged 15 to 18 years, consent was also asked from 1 of the parents/guardians.

The questionnaire instrument was adapted from the multi-centre study on factors determining the differential spread of HIV in 4 African cities.[15] After a set of questions on sociodemographic characteristics, questions were asked on sexual debut, marriage, number of premarital partners, and lifetime number of sex partners. A partner-by-partner approach was used to ask detailed questions on sexual behaviours during the last 12 months for all spousal and non-spousal partnerships. Questions included sociodemographic characteristics of partners, beginning and end of each relationship (enabling to calculate con-currency), condom use, and whether money was exchanged for sex.

After a 1-week pilot test of the questionnaire, data collection took place from February until May 1999. Data were entered in Epi-Info 6 and analysed using SPSS version 9.0. Urban and rural sites were compared by calculating the Chi-squared test for categorical and ordinal data and the Mann-Whitney U test for continuous data because they were not normally distributed. Median age at sexual debut and at first marriage was calculated using Kaplan-Meier survival techniques, with censoring at age of interview of individuals who had not had sex and who had not married, respectively, and their statistical difference was tested using the log rank test in Kaplan-Meier. Differences in sexual behaviour variables between urban and rural areas were adjusted for sociodemographic differences (age, education, religion, ethnicity, place of birth, and occupation) using logistic regression analysis for dichotomous outcome variables and Cox regression analysis for continuous/censored outcome variables.

Results

Of the 648 eligible household members aged 15 to 29 years of age, 26 did not give consent and 38 were not found in 3 revisits. The response rate was therefore 90%. In total, 584 respondents were interviewed, 150 in Kisumu and 434 in Siaya/Bondo (290 in Siaya, 144 in Bondo). The number of men and women was almost equal (49% vs. 51%) and did not differ significantly between urban and rural sites.

Sociodemographic differences between urban and rural respondents are given in Table 4.1 for males and females separately. Urban men were slightly younger than rural men. Compared with respondents from rural areas, men and women from urban areas were better educated, more likely to have a religion other than Christian, more likely to be from non-Luo origin, and less likely to have been born in the town/district where they lived now. More men from rural areas were farmers or manual workers, whereas urban men were more likely to be sales/service worker or unemployed. More women in rural areas were housewives or farmers, whereas urban women were more likely to be unemployed.

In the age group 15 to 19, approximately three fourths of boys and girls had ever had sex (Table 4.2) Over one third had had sex before age 15. For women, the age of sexual debut

Table 4.1 Sociodemographic characteristics of young adult men and women aged 15-29 years in Nyanza province in Kenya; a comparison of urban (Kisumu town) and rural areas (Siaya and Bondo districts)

	Men			Women		
	Urban (n = 76)	Rural (n = 209)	P-value	Urban (n = 74)	Rural (n = 225)	P-value
Age (yrs)			0.07[1]			0.2[1]
15-19	37%	41%		41%	31%	
20-24	51%	38%		28%	40%	
25-29	12%	21%		31%	29%	
Education			<0.01[1]			<0.01[1]
None / primary not completed	18%	26%		39%	50%	
Primary	29%	48%		16%	33%	
Secondary	42%	23%		42%	17%	
Higher	11%	3%		3%	0%	
Religion			<0.01[1]			<0.01[1]
Christian	83%	98%		88%	99%	
Other (mainly Muslim)	17%	2%		12%	1%	
Ethnicity			<0.01[1]			<0.01[1]
Luo	80%	99%		77%	93%	
Other (mainly Luhya)	20%	1%		23%	7%	
Place of birth			<0.01[1]			<0.01[1]
Same town or district[2]	47%	72%		30%	66%	
Other urban	28%	24%		12%	17%	
Other rural	22%	3%		58%	16%	
Other country	3%	1%		0%	0%	
Occupation			<0.01[1]			.03[1]
Sales/service worker	29%	20%		34%	32%	
Manual worker	13%	21%		4%	0%	
Farmer	1%	22%		0%	7%	
Student	23%	21%		10%	12%	
Housewife				20%	27%	
Unemployed	20%	11%		26%	19%	
Other	13%	6%		7%	4%	

[1] Chi-squared test, [2] Where one (still) lives.

was nearly a year lower for rural areas (15.7) than for urban areas (16.5, p=0.02). Men and women in urban areas were less often married than in rural areas (p=0.01 and p=0.04). Men in Kisumu married in their late 20s, whereas men in Siaya/Bondo married around age 25. Because of late age at marriage, few men were virgins when they married and the time between sexual debut and first marriage was over 10 years. Women married around 20 years; one fourth were virgins at the time of marriage in Kisumu, but only 7% in Siaya/Bondo (p=0.01). Almost one third of married women had a spouse who was 10 or more years older than themselves.

Table 4.2 Sexual debut and marriage of young adult men and women aged 15-29 years in Nyanza province in Kenya; a comparison of urban (Kisumu town) and rural areas (Siaya and Bondo districts)

	Urban Kisumu (n=150)[1]	Rural Siaya/Bondo (n=434)[1]	P-value
Sexually active			
All men	90%	90%	1.0[2]
Men 15-19	75%	76%	1.0[2]
All women	88%	92%	0.3[2]
Women 15-19	73%	75%	0.8[2]
Age of sexual debut			
Men: mean (median)[3]	15.1 (15.0)	15.3 (15.0)	0.7[4]
Before age 15	40%	34%	0.4[2]
Women: mean (median)[3]	16.5 (16.0)	15.7 (16.0)	0.02[4]
Before age 15	18%	28%	0.06[2]
Ever married			
All men	12%	26%	0.01[2]
Men 15-19	0%	4%	0.3[2]
All women	51%	65%	0.04[2]
Women 15-19	17%	28%	0.2[2]
Age at first marriage			
Men: median[3]	>27[5]	25.0	0.02[4]
Women: median[3]	21.0	19.0	0.08[4]
Virgin at marriage			
Men	11%	2%	0.14[2]
Women	25%	7%	<0.01[2]
Interval sexual debut – first marriage			
Men: median[3]	>17[5]	11.0	<0.01[4]
Women: median[3]	4.0	4.0	0.9[4]
Age difference between spouses			
Married men: median	3.0 (n=9)	3.5	0.3[6]
Married women: median	6.5	6.0	0.4[6]
≥ 10 years	30%	27%	0.8[2]

[1] Sample sizes: urban men n=76 (15-19 n=28, married n=9), urban women n=74 (15-19 n=30, married n=33), rural men n=209 (15-19 n=86, married n=48), rural women n=225 (15-19 n=69, married n=123).

[2] Chi-squared test, [3] Kaplan Meier survival analysis, [4] Log Rank test in Kaplan Meier.

[5] Median could not be calculated because too many cases were censored, [6] Mann Whitney U test.

The median lifetime number of partners for men was 4 to 6 (Table 4.3). Over one fourth of the young men aged 15 to 29 reported to have had 10 or more partners. Women in Kisumu reported fewer lifetime partners than rural women (median 2 vs. 3, p<0.01). Over half of men in Siaya/Bondo reported multiple partnerships in the past year, versus 38% in Kisumu (p=0.04). Less than 10% of women reported such relationships in any site. At the time of interview, over one fourth of non-married men had more than 1 ongoing relationship. Few men reported commercial sex in the past year, and 16% had a 1-time sex contact. Condom use was higher in urban than in rural areas: 24% of urban men mostly or

Table 4.3 Rate of partner change and condom use among sexually active young adult men and women aged 15-29 years in Nyanza province in Kenya; a comparison of urban (Kisumu town) and rural areas (Siaya and Bondo districts)

	Urban Kisumu (n=133)[1]	Rural Siaya/Bondo (n=394)[1]	P-value
Lifetime number of partners			
All men: median (interquartile range)	4.0 (3.0-9.8)	6.0 (3.0-10.0)	0.2[2]
≥ 10	25%	30%	0.4[3]
Men 15-19: median (interquartile range)	3.0 (1.0-4.0)	3.0 (2.0-6.0)	0.1[2]
All women: median (interquartile range)	2.0 (1.0-3.0)	3.0 (2.0-4.0)	<0.01[2]
Women 15-19: median (interquartile range)	1.5 (1.0-3.3)	2.0 (1.0-4.0)	0.08[2]
Multiple partners in past year[4]			
Men	38%	53%	0.04[3]
Women	9%	9%	0.9[3]
Concurrency at time of interview[4]			
Married men	11%	21%	0.5[3]
Non-married men	26%	27%	0.9[3]
Married women	3%	2%	0.8[3]
Non-married women	6%	7%	0.9[3]
Commercial / one-time sex in past year			
Men			
Sex with female sex worker	2%	1%	0.5[3]
Relationship in which sex was mostly/always exchanged for money	6%	9%	0.4[3]
One-time sex	16%	16%	1.0[3]
Women			
Relationship in which sex was mostly/always exchanged for money	5%	3%	0.5[3]
One-time sex	0%	1%	0.6[3]
Condom use[5]			
Men: during last non-spousal sex act	26%	20%	0.4[3]
Mostly/always with non-spousal partners past year	24%	13%	0.08[3]
Women: during last non-spousal sex act	41%	25%	0.2[3]
Mostly/always with non-spousal partners past year	36%	11%	0.01[3]

[1] Sample sizes: urban men n=68 (15-19 n=21, married n=9), urban women n=65 (15-19 n=22, married n=33), rural men n=187 (15-19 n=65, married n=48), rural women n=207 (15-19 n=52, married n=123).

[2] Mann Whitney *U* test, [3] Chi-squared test, [4] Polygamous relationships excluded.

[5] Of the respondents who had a non-spousal partner in the past year (i.e., 75% of urban and rural men, 34% of urban women and 28% of rural women).

always used a condom with non-spousal partners in the past year versus 13% of rural men (p=0.08); for women, this was 36% versus 11% (p=0.01).

We analysed whether the differences in sexual behaviour variables between urban and rural sites could be explained by sociodemographic differences (age composition, education, religion, ethnicity, place of birth, and occupation). Separate logistic and Cox regression analyses were conducted for each of the variables in Tables 4.2 and 4.3, for

Men: Odds ratio's + 95% CI of rural versus urban

Women: Odds ratio's + 95% CI of rural versus urban
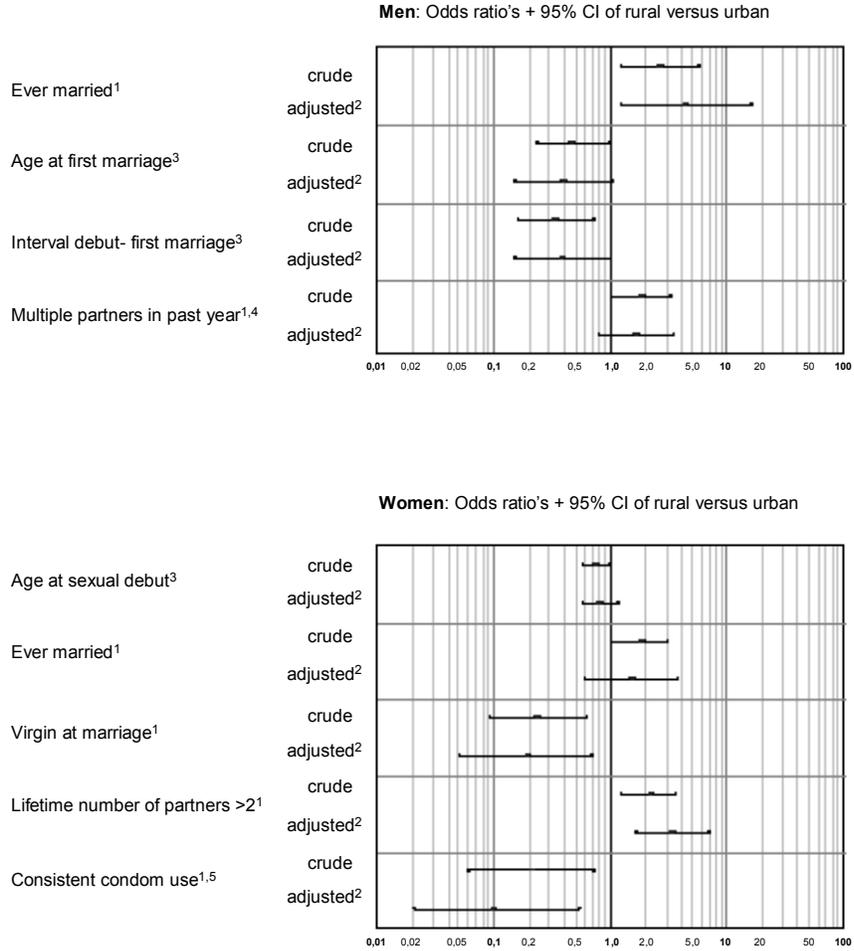
Figure 4.1 The effect of rural residence as compared with urban residence on various sexual risk behaviours of young adult men and women aged 15 to 29 yeas in Nyanza province, Kenya (n=584)

1 Logistic regression analysis.

2 Adjusted for age, education, religion, ethnicity, place of birth, and (for men only) occupation. For women, occupation could not be adjusted for due to empty cells.

3 Cox regression analysis, 4 Polygamous marriages excluded.

5 Mostly/always with all non-spousal partners in the past year. CI = Confidence Interval

which significant (p<0.05) differences between urban and rural areas were found. Figure 4.1 shows for each variable the crude and adjusted odds ratios and their 95% confidence interval, with urban residence as the reference category (i.e., odds ratios for urban residence are 1.0). For none of the outcome variables, difference in sexual behaviour between urban and rural areas could convincingly be explained by sociodemographic differences (Fig. 4.1). There were no substantial decreases in point estimates for odds

ratios when comparing adjusted with crude odds ratios, although upper or lower limits of the confidence interval sometimes crossed the border of significance (which is partly the result of the higher number of degrees of freedom in multivariate analyses). For some sexual behaviour variables, urban/rural differences even increased after adjusting for sociodemographic confounders: being ever married for men, and having more than 2 lifetime partners and consistent condom use in casual relations for women. After adjustments, the following differences clearly remained significant: rural men were approximately 4 times more likely to be married than urban men, whereas rural women were approximately 5 times less likely to be a virgin at marriage than urban women, 3 times more likely to have had more than 2 lifetime partners, and 10 times less likely to be a consistent condom user with non-spousal partners.

Discussion

This study among young adults aged 15 to 29 in Nyanza province in Kenya shows high-risk sexual behaviour in both urban and rural areas. Men and women started sex at an early age, the age difference between spouses was rather large (i.e., dissortative age mixing), there was a high rate of partner change and concurrency in relationships, and consistent condom use with non-marital partners was low. These behaviours have proven, both empirically[3, 7, 18, 19] and by modeling,[20, 21] to be associated with an increased risk of STD/HIV infection. Not many men reported commercial sex, but this can be related to the age range of our sample (15-29 years), which is lower than the age of most clients of female sex workers in Nyanza.[22]

Our findings are not only 'high risk' in an absolute sense, but also when compared to the Demographic and Health Surveys (DHS) from 28 countries in sub-Saharan Africa.[23] Our study belongs to the most risky quartile for both urban and rural young men and women for all 3 DHS sexual behaviour indicators, namely, median age of first sex, having multiple partners in the past year (except for urban males), and condom use during last sex with a non-spousal partner in the last year (except for urban and rural females).

In our study, rural women reported a riskier sexual behaviour than women who live in town: they had a younger age at sexual debut, were less often a virgin at marriage, had more lifetime partners, and less consistently used condoms with non-spousal partners. These behaviours are known to be risk factors in HIV/STD transmission.[18, 24, 25] The riskier sexual behaviour among rural women could not be explained by sociodemographic differences between urban and rural areas.

Rural men married at a younger age, and the interval between sexual debut and first marriage was shorter than for urban men. From observational studies, it is not very clear whether (young age at) marriage is associated with increased or decreased risk for HIV/STD for men.[3, 26] The only urban-rural difference for men that is clearly associated with HIV risk, namely that rural men more often had multiple partners last year than

urban men, could be explained by sociodemographic differences (rural areas had more Luo inhabitants, and Luo men more often had multiple partners). Overall, we can conclude that the sexual behaviour of men was as risky in urban as in rural Nyanza.

The equally high (men) or lower risk behaviour (women) in Kisumu town cannot be explained by risk reduction resulting from STD/HIV interventions. A recent sexual behaviour study in Kisumu showed that for men, median age at first sex and number of premarital partners was equal among all age groups.[27] For women, there was a trend toward more, in stead of less, premarital partners in the younger age groups.[27] There was a tendency toward later age at first sex among young girls, but this is a pattern that is also seen in rural Siaya,[23] as well as all over Africa.[28] Selective AIDS mortality among high-risk individuals in Kisumu is unlikely to play a major role in explaining the relatively low sexual risk behaviour in town, because our study population is young (median age, 21 years). The high-risk sexual behaviour that we have found in the rural areas cannot be the result of mingling with Kisumu town; there is little urban-rural migration (two thirds of rural respondents have lived in the rural district since birth), the sampled rural areas are quite far away from Kisumu town (between 60 and 130 km), and there is little sexual mixing between Kisumu and the rural areas (for the rural respondents, 75% of the 390 non-spousal partners in the past year were met in the same rural district).

Our findings contradict the general assumption that sexual behaviour is more risky in towns, where individualism and anonymity facilitate casual and commercial sex, as compared with remote rural villages, where cultural rules toward sexual relationships are more strict, especially for women.[2, 12, 13] Is Nyanza an exception, because of its dense population and high mobility? Studies in nearby areas around Lake Victoria show more risky sexual behaviour in urban than rural sites, with higher numbers of partners,[3, 7, 9, 29–31] and a higher proportion of sexually active adolescents[8, 29] in urban areas. When reviewing DHS data on urban-rural differences for 28 sub-Saharan African countries,[23] we see that the proportion of young men and women (15-24 years of age) engaging in high-risk sex and having multiple partners in the past year is higher in urban areas for all countries. However, age of first sex is lower in rural areas in 5 of 28 countries for men and in 19 of 28 countries for women. Thus, in sub-Saharan Africa, urban residence is generally associated with casual sex and higher partner change rates, but rural residence is for women often associated with early sexual debut. We know of only 2 studies (Nigeria, United States) that are in line with our findings that risk behaviour can be equally high or even higher in rural areas.[13, 32] Our study conformed to most other studies in both East and in West Africa in that condom use is higher in urban environments.[33]

The high-risk sexual behaviour in rural Nyanza implies that, even if the HIV epidemic is not fuelled by new infections from urban areas, the disease might spread within rural areas as fast as it has spread in urban areas. It is well possible that HIV prevalences in Siaya/Bondo will level up to those in Kisumu. Another study has found that in the advanced epidemic in South Africa, the direction of HIV spread is not only from urban

areas to rural areas by migrant men, but also from rural women to their partners (migrant or not).[34] A significant amount of transmission thus occurs within rural areas, and this role of local rural transmission has not been much acknowledged.[35]

What are the limitations of our results? The response rate of 90% is rather high (especially because our sample concerned young adults who are relatively often traveling or boarding in school), although the missed 10% might have been a high-risk group. We tried to overcome the validity problems that are associated with face-to-face questionnaires[36–38]: our questionnaire was thoroughly developed and pilot-tested, the interviewers were same sex and not much older than the respondents, they were well trained, the interviews were conducted in the local language, a lot of time was invested in building rapport with respondents before starting the interview, and much attention was paid to conducting the interviews in privacy. Nevertheless, like in other sexual behaviour studies[12, 27] we found that men reported more relationships than women (ratio 2:3) when excluding relationships with partners outside the age or geographic range of our sample. Because the ratio of partnerships in the last year reported by men versus women did not differ substantially between urban and rural areas (2.1 vs. 2.3), there is no indication of different reporting biases between urban and rural sites.

We tried to crosscheck the respondents' answers by holding detailed in-depth interviews with every second respondent by the same interviewer within a few days after the questionnaire. For both men and women, the results revealed some underreporting in the initial interview for urban as well as rural areas. The ratio of relationships reported by men and women thereby slightly increased instead of decreased. This could mean that cultural taboos are so strong that even in in-depth interviews women hide multiple relationships, or that men still exaggerate theirs (which implies that they had to invent full stories). It could also mean that we have missed a core group of high-risk women like mobile sex workers (although not many men reported sex with a sex worker).

Our study has implications for STD/HIV control in Nyanza. Interventions aiming at sexual behaviour change should be expanded from Kisumu town to the surrounding rural districts. In particular, the low levels of condom use in rural areas should be addressed by improving condom acceptance as well as supply. Although lower than in Kisumu town, the population density in the rural areas is relatively high when compared with other rural provinces in Kenya, which is favourable for the cost-effectiveness of interventions. Expanding behaviour change interventions to rural areas will also favour equity between rural and urban residents. Because adolescents begin risky behaviour early in their sexual career (half of boys 15-19 years have had 3 sexual partners, and HIV prevalence in girls aged 15-19 is as high as 23%[15]), interventions should address children/young adolescents before they become sexually active, i.e., in their early teens. After all, it will be easier to establish patterns of safe sex practices from the start than to change the high-risk behaviours as shown in this study.

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5

Gender differences in health care seeking behaviour for sexually transmitted diseases: a population-based study in Nairobi, Kenya

Abstract

Background: Health care seeking behaviour for sexually transmitted diseases (STDs) is important in STD/HIV control.

Goal: The goal of this study was to describe the proportion seeking care, patient delay, and choice of provider among men and women with STD-related complaints in Nairobi, Kenya.

Study Design: A population-based questionnaire was administered in 7 randomly selected clusters (small geographic areas covering approximately 150 households each).

Results: Of the 291 respondents reporting complaints, 20% of men versus 35% of women did not seek care, mainly because symptoms were not considered severe, symptoms had disappeared, or as a result of lack of money. Of those who sought care, women waited longer than men (41 vs. 16 days). Most men and women went to the private sector (72% and 57%, respectively), whereas the informal sector was rarely visited (13% and 16%, respectively). Relatively more women visited the government sector (28% vs. 15%). Because women were mostly monogamous, they did not relate their complaints to sexual intercourse, which hampered prompt care seeking.

Conclusion: Women should be convinced to seek care promptly, e.g., through health education in communities.

Introduction

Sexually transmitted diseases (STDs) other than HIV are a major burden of disease in many developing countries.[1] In 1993, they were the second most important cause of loss of healthy life years in women of childbearing age, after maternal causes.[2] In Nairobi, Kenya, studies in selected groups have shown STD infection rates to be substantial, although prevalence in the general population is largely unknown.[3–5] Although STD prevalences among female antenatal and family planning clinic attendees in Nairobi declined between 1992 and 1999, they were still as high as 2% for gonorrhea, 3% for syphilis, and 17% for chlamydia in 1999; the HIV prevalence increased from 15% to 19%.[6] STDs not only present a major public health problem in their own right, they also enhance the transmission of HIV.[6] Control of STDs, therefore, has become an important strategy for the prevention of HIV infection.[7]

Two aspects of health care seeking behaviour are important in the control of STDs, namely, the time from onset of symptoms until seeking care (patient delay) and the choice of provider. A short patient delay reduces the transmission of STDs (and HIV) by decreasing the duration of infectiousness.[8, 9] The choice of provider is also critical, because

quality of STD case management varies between health sectors and types of providers.[10–12] Seeking treatment from providers who give effective care will not only cure the STD episode, but also has the potential to reduce transmission of current and future infections if people follow up advice on condom use, partner referral, and sexual risk reduction strategies. Health seeking behaviour could be influenced by characteristics of the patient (such as gender, age, education, and motivation), characteristics of the cultural setting of the patient (such as gender roles and conceptions about health and disease), characteristics of the disease (such as type of complaint, severity, acute or chronic), and characteristics of the health service (such as accessibility, costs, quality of care, and waiting times).[13, 14] Insight into factors that make people decide why, when, and where to seek care can improve the programs that focus on STD management and health education in communities.[8]

Most studies on health care seeking behaviour for STDs have been clinic-based.[15–18] Their findings cannot be generalised to the population at large, because these studies do not address STD patients who never seek care and patients who seek care in the informal sector. In the few studies that were population-based, i.e., based on individuals from the general population who reported STD complaints, the proportions of patients who did not seek care varied from 2% to 41% for men and from 10% to 45% for women. The studies showed that roughly two thirds of patients sought care in the formal health sector (including pharmacies), whereas in the informal sector, women more often sought care from traditional healers and men mostly bought drugs in shops or other places.[19–23] The studies did not report on patient delay.[19–23]

In this study, a population-based survey was carried out among all household members of 7 randomly sampled clusters of Nairobi, Kenya. The aim was to describe 3 aspects of health care seeking behaviour for STDs: the proportion of symptomatic individuals seeking care, patient delay, and the choice of provider(s). We also studied patient, disease, health service, and cultural characteristics that determine these 3 aspects of health-seeking behaviour. The study was part of a larger research project in which the effectiveness of STD case management by different types of healthcare providers was assessed.[10, 11]

Methods

Study Population and Sampling

Four densely populated sublocations in Nairobi were selected for this cross-sectional study: Korogocho and Mathare in the northeast, Kibera in the south, and Kawagware in the west. These areas cover approximately one third of the inhabitants of Nairobi, a city with an estimated 2.5 million inhabitants. The sublocations were selected to cover a mix of medium, low, and very low social economic status (SES) areas and to be geographically spread over the city.

Within the 4 study areas, we used the clusters of the Central Bureau of Statistics (CBS) as our sampling framework. The borders of these CBS clusters, each covering approximately 150 households, are well defined on maps. With the assistance of CBS personnel, we determined the SES of each cluster using predefined criteria about housing conditions such as building materials and size of the houses and availability of housing facilities such as running water, electricity, and toilets. We then randomly sampled 1 cluster per SES per study area. Because some study areas contained all 3 SES and others only contained 1, this resulted in 7 clusters, which roughly reflect the division of SES in Nairobi: 1 medium SES cluster (in Kibera), 3 low SES clusters (in Mathare, Kawagware, and Kibera), and 3 very low SES clusters (in Korogocho, Kawagware, and Kibera). In each cluster, all household members aged 13 to 39 were eligible to be interviewed using a structured questionnaire.

Questionnaire

The questionnaire was developed and adapted on the basis of preceding key informant interviews with influential community members and healthcare staff, and focus group discussions with married and unmarried men and women in the study areas. The first part of the questionnaire covered sociodemographic characteristics, general health care seeking behaviour, whether people had experienced a list of complaints during the past 12 months (general and STD-related complaints in mixed order), and whether people believed that each of these complaints generally is sexually transmitted. This lengthy introductory part helped to build rapport with respondents before addressing sensitive questions related to sexual behaviour. It also avoided the potential problem that the duration of the interview could reveal to outsiders that a respondent had experienced an STD.

The second part of the questionnaire was only administered to people who reported to have had an STD-related complaint in the past year. We considered the following STD-related complaints for men and women: pain during urination, vaginal/urethral discharge, genital ulcer, genital/inguinal swelling, genital itchiness, and genital pain. Additionally, lower abdominal pain was considered an STD-related complaint for women. All household members aged 13 to 39 who experienced any such STD-related complaints in the past year were asked the following questions, referring to the most recent STD-related complaint: whether respondents had sought any care, patient delay (time from onset of symptoms until seeking care), first and subsequent choice of provider, drug compliance, partner notification, sex/condom use while having symptoms, presumed way of contracting the complaint, and costs of treatment.

Data Collection and Analyses

Data collection took place from February until May 1999. Eight senior social science students (4 male, 4 female) were trained to use the pretested English and Kiswahili version of the questionnaire. Local chiefs and elders who had authority in the sampled clusters introduced the interviewers to the communities and accompanied them during fieldwork.

Teams of 1 male and 1 female interviewer visited each household and made 3 revisits to find all eligible household members. Verbal consent was asked from each respondent before participation in the study; for minors less than 18 years old, consent was also needed from a parent/guardian. Respondents were interviewed in privacy by interviewers of the same gender.

We checked interview forms daily for completeness and inconsistencies. All interviews with respondents who had experienced an STD-related complaint ('cases') were entered in Epi Info 6. Because data entry of all interviews with respondents who did not have an STD-related complaint ('controls') was too costly, a random sample of 25% of these controls (400 of 1608) was constructed to reflect the underlying sex distribution of the entire study group.

Data were analysed using SPSS 10.0. We calculated frequencies and cross-tabulations, and compared cases and controls as well as men and women by calculating Chi-squared or Fisher exact tests for categorical and ordinal data and Wilcoxon W tests for continuous data that were not normally distributed. Multivariate logistic regression analyses were performed to assess predictors of the following behaviours: 1) seeking any care; 2) seeking care within 7 days after onset of symptoms; 3) seeking care in the formal sector (including government, private, mission, and NGO clinics as well as pharmacies) versus the informal sector (including traditional healers, drug shops, and taking drugs from home/friend); and 4) seeking care in the government versus the private sector (the latter including private, mission, and NGO clinics as well as pharmacies). Analyses were performed for men and women together, taking possible interactions between predictive variables and gender into account. We considered the following predictive variables: gender, age, marital status, education, place of birth, years living in Nairobi, SES of cluster where one lives, income, reported number of sex partners in the past 12 months, type of most recent STD complaint, and presumed way of contracting the complaint (sex vs. other/don't know). Additionally, 'type of provider visited' was considered to predict seeking care within 7 days, and 'patient delay' and 'main reason for choice of facility' to predict care seeking in the formal and government sector. The following strategy was followed for the multivariate analyses. Variables or interactions that were significantly associated with the outcomes in bivariate analyses (p=0.1) were included in the multivariate analyses, and those that retained significance in the multivariate analyses at the p=0.05 level were included in the final logistic regression models. Confounding was studied by adding possible confounders to the final models (age, education, SES, income, years living in Nairobi).

Results

The 7 sampled clusters contained 1181 households with a total of 4176 household members, of whom 2365 household members were found eligible (i.e., aged 13 to 39). Of

Table 5.1 Proportion of household members aged 13-39 who reported to have experienced STD-related complaints in the past year in Nairobi, Kenya (n=1929)

STD-related complaint	Experienced in past year[1] (%)		Most recent in past year[1] (%)	
	Men (n=945)	Women (n=984)	Men (n=929)[2]	Women (n=983)[2]
Painful urination	11.1	7.9	4.4	3.0
Lower abdominal pain	n.a.	11.0	n.a.	5.0
Genital itchiness	6.3	8.1	1.7	4.1
Urethral discharge	7.7	n.a.	3.1	n.a.
Vaginal discharge	n.a.	4.8	n.a.	1.7
Genital ulcer	5.1	3.6	3.1	1.6
Genital swelling	3.0	3.0	1.0	0.4
Genital pain	3.3	2.6	0.8	0.3
Any STD-related complaint	15.6	16.3	14.1	16.2

[1] For 'experienced in past year' there is overlap between categories (i.e., some people experienced more than 1 STD complaint in the past year), whereas for 'most recent in past year' there is no overlap (only 1 STD was the most recent).

[2] For 16 men and 1 woman, it was unknown which complaint was the most recent.

STD = sexually transmitted disease; n.a. = not applicable.

these, 436 household members (18%) could not be interviewed for various reasons: not at home after 3 visits (317), refusal (85), consent denied by parent/guardian for interviewing minors (21), consent denied by head of household for interviewing adults (5), language problems (4), and miscellaneous (4). The remaining 1929 respondents yielded a response rate of 82%. Of these 1929 respondents, 307 (16%) reported to have experienced an STD-related complaint in the past 12 months. This proportion was similar for men and women (15.6% and 16.3%).

Table 5.1 shows the proportions of men and women who reported STD-related complaints in the past year. The highest proportions were reported for painful urination by men and lower abdominal pain by women (each 11%). The lowest proportions were reported for genital swellings and genital pain by both men and women (each 3%). Table 5.1 also shows the most recent complaint, which is the complaint for which questions on health care seeking were subsequently asked. More men than women said to have most recently experienced a genital ulcer and discharge, and more women than men reported genital itchiness.

Approximately three fourths of symptomatic men and women had experienced more than 1 STD-related complaint in the past year (mean 2.5 and 2.3) either concurrently or at different times. Furthermore, 20% of men and women had experienced more than 1 episode of the same complaint. This proportion was lowest for genital ulcers (6% of men and 9% of women) and highest for genital pain (13% and 23%) and lower abdominal pain in women (17%). Respondents who experienced a certain STD-related complaint in the

past year were asked whether they believed that such a complaint usually is a symptom of an STD. Between 83% and 95% of men indeed believed that such a complaint is sexually transmitted, depending on the complaint. For women, these proportions were much lower, between 61% and 77%. Genital ulcers and discharge were slightly more often believed to be sexually transmitted (namely, by 94% of men and 73% of women) than other STD-related complaints (which were believed to be sexually transmitted by 88% of men and 69% of women).

Table 5.2 gives an overview of the sociodemographic characteristics of the 307 respondents who experienced an STD-related complaint in the past year (cases) as compared with the random subsample of 400 control subjects. Compared with male control subjects, male cases were younger, more often had an extramarital partner, had more sexual partners in the past year, attained a lower educational level, were more often born in rural areas, and more often lived in low or very low SES clusters. Female cases, as compared with female control subjects, were more often married, had more sexual partners in the past year (14% vs. 8% had more than 1), and more often lived in very low SES areas. When comparing male and female cases, the same significant differences were found as when comparing male and female control subjects: women were younger than men, were more often married, less often had an extramarital partner, had fewer sexual partners in the previous year, and had a lower educational level.

Table 5.3 shows the health care seeking behaviour of the 307 respondents for their most recent STD-related complaint. Overall, 20% of men versus 35% of women did not seek any care at all. Although these proportions did not differ significantly for the various complaints (p=0.2 for men and p=0.1 for women), they tended for both men and women to be lowest for discharge (7% and 24%) and genital ulcers (14% and 19%). The most important reasons for men and women not to seek care was that symptoms were not perceived as severe, symptoms had disappeared, or lack of money. Most men and women who sought care did so within 1 week after onset of symptoms, but the mean patient delay was 16 days for men versus 41 days for women. The majority of men and women went to the private health sector (72% and 57%), in the first place to private clinics and rarely to pharmacies. Twice as many women as men sought care in the government sector (28% vs. 15%). Only 13% of men and 16% of women went to the informal health sector, mostly to traditional healers. The main reasons for men and women for choosing a particular provider were convenience or nearness of the facility location, the assumed high quality of care, and affordability.

Women visited the government sector mainly for convenience or nearness of the facility location, they visited the private sector mainly for its assumed high quality of care, and they visited the informal sector because they were advised or taken by somebody who had good experience with a certain provider (p=0.01). For men, differences in reasons why certain providers were visited were not significant. Of all people who sought care, 13% of

Table 5.2 Comparison of sociodemographic characteristics of male and female household members aged 13-39 who experienced (cases, n=307) and who did not experience (controls, n=400) STD-related complaints in the past 12 months in Nairobi, Kenya

	Men			Women		
	Cases (n=147)	Controls (n=195)	P-value	Cases (n=160)	Controls (n=205)	P-value
Age (yrs)[1]			0.004			0.4
Median	23	25		22	23	
Marital status[2]			0.08			0.03
Single	54%	52%		24%	34%	
Married/cohabiting	40%	47%		71%	59%	
Divorced/separated	5%	2%		2%	6%	
Widowed	1%	0%		3%	2%	
Currently having an extramarital partner[3]			0.03			0.9
(married respondents only)	40%	23%		4%	4%	
No. of sexual partners last 12 months[1]			<0.001			<0.001
0	0%	12%		3%	17%	
1	37%	54%		84%	75%	
2	31%	22%		7%	6%	
3-5	24%	10%		3%	1%	
6+	8%	2%		4%	1%	
Educational level[2]			0.05			0.09
No education / primary not completed	23%	14%		48%	35%	
Primary	56%	51%		44%	55%	
Secondary	17%	27%		6%	8%	
Tertiary	5%	7%		3%	3%	
Place of birth[2]			0.03			0.5
Nairobi	12%	19%		9%	14%	
Other urban	4%	8%		4%	5%	
Other rural	85%	72%		86%	79%	
Other country	0%	1%		1%	2%	
Years living in Nairobi[1]			0.3			0.3
< ½ year	34%	34%		31%	43%	
½ year - 5 years	34%	28%		46%	30%	
> 5 years	25%	24%		15%	18%	
Since birth	6%	15%		8%	9%	
SES of cluster of residence[3, 4]			0.002			0.002
Medium	3%	14%		4%	15%	
Low	47%	42%		46%	45%	
Very low	50%	45%		50%	41%	

[1] Tested using the Wilcoxon *W* test. [2] Tested using the Fisher exact test. [3] Tested using the Chi-squared test.

[4] Not derived from questionnaire but assessed by researchers using predefined criteria about housing conditions and facilities.

STD = sexually transmitted disease; SES = socioeconomic status.

Table 5.3 Comparison of health care seeking behaviour of men and women aged 13-39 who experienced STD-related complaints in the past 12 months in Nairobi, Kenya

	Men	Women	P-value
Not seeking care at all[1] (n=291)	20%	35%	0.004
Mean duration of symptoms of people not seeking care[2]			
Of those who still had symptoms (n=35)	10 months	9 months	0.8
Of those whose symptoms had disappeared (n=37)	6 days	52 days	0.1
Main reason for not seeking care[3] (n=80)			1.0
Symptoms not severe	35%	33%	
Symptoms had disappeared	23%	30%	
No money	23%	20%	
Shame/fear	4%	4%	
Other	15%	13%	
Patient delay[2] (n=212)			0.007
≤ 7 days	69%	54%	
1 – 4 weeks	23%	31%	
> 1 month	8%	15%	
Mean (median)	16 (7) days	41 (7) days	
First health care seeking action[1] (n=217)			0.04[4]
Government sector	15%	28%	
Private sector	72%	57%	
Private clinic	43%	33%	
Mission/NGO clinic	17%	18%	
Pharmacy	13%	6%	
Informal sector	13%	16%	
Traditional healer	7%	11%	
Drug shop	3%	1%	
Home/friend	3%	4%	
Main reason for choice of provider[3] (n=210)			0.3
Near or convenient	28%	29%	
Assumed high quality of care	22%	20%	
Affordability	10%	12%	
Advised or taken by somebody	6%	11%	
Availability of drugs	10%	4%	
Privacy	6%	4%	
Knows health worker/other staff member	5%	2%	
Friendly staff	5%	2%	
Other	11%	16%	

[1] Tested using the Chi-squared test. [2] Tested using the Wilcoxon *W* test. [3] Tested using the Fisher exact test.

[4] Differences were significant for the 3 health sectors, but not for the 7 types of facilities/providers within these sectors (p=0.09, Fisher exact test).

STD = sexually transmitted disease.

the men and 18% of the women went to a second provider for their most recent STD-related complaint. The choice of a second provider was similar to the choice of a first provider, i.e., predominantly private clinics.

Table 5.4 shows various aspects related to health care seeking that are important for STD control. Self-reported compliance was high, but only approximately one fourth of the men and one third of the women reported to have asked their partner to seek care. Approximately two thirds of these partners were reported to have actually sought care. The majority of women with STD-related complaints had unprotected sex while they were symptomatic, whereas the majority of men did not have sex at all, mainly to avoid transmission or because sex was too painful. Over 80% of the men thought that they had gotten their complaint through sexual intercourse, mainly with a casual partner. However, more than half of the women reported not to know how they had gotten the complaint or said that it just started, and another 18% thought they got it through reasons other than sexual intercourse such as pregnancy or menstruation. Traditional causes like witchcraft or wrath of ancestors was only mentioned by 1 respondent. In most types of facilities, costs of first treatment (i.e., consultation plus medication) were higher for men than for women (median, 250 Ksh vs. 150 Ksh; 100 Ksh=$1.50 U.S. in 1999). Men and women paid most in private clinics. When asked what barriers people with an STD generally face when they seek care, men mostly mentioned costs, whereas women mostly mentioned shame/fear of stigma. Distance to the clinic, unfriendly staff, lack of privacy, or low-quality care was hardly mentioned.

Table 5.5 shows the results of the multivariate logistic regression analyses for men and women together. Men and women who sought any care were relatively old, and they more often believed that their complaint was contracted through sexual intercourse. The difference between men and women in proportion seeking care (women odds ratio, 2.2; 1.3–3.7) could thus be explained by women more often believing that their complaints were unrelated to sexual intercourse. Men seeking care within 7 days after onset of symptoms more often believed that their complaint was caused by sex than women, whereas women who sought prompt care were relatively young. Apparently, young women seek less care (approximately 50%), but they seek prompt care, whereas older women more often seek care (approximately 75%) but they wait longer. Difference in the type of perceived complaints was not a significant factor in explaining the lower proportion seeking care or the longer patient delay among women. Men and women who sought care in the formal sector were older and had less sexual partners than people who visited the informal sector. For seeking care within the government versus the private sector, there were no significant predictors in multivariate analyses except gender. Adding possible confounders to each of these logistic regression models did not change any of the models substantially, except for seeking care within 7 days after onset of symptoms. For this outcome, presumed way of contracting the complaint became an insignificant predictor for men after adding the confounder income (men with higher income tended to seek care earlier).

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Table 5.4 Comparison of various aspects related to health care seeking of men and women aged 13-39 who experienced STD-related complaints in the past 12 months in Nairobi, Kenya

	Men	Women	P-value
Self-reported compliance[1] (n=194)	89%	90%	0.7
Asked partner to seek care[1] (n=233)	28%	35%	0.3
Partner actually sought care[1] (n=221)	19%	22%	0.6
Sex while symptomatic[1] (n=276)			<0.001
Unprotected sex	23%	59%	
Used condoms	12%	3%	
No sex	65%	38%	
Reasons for not having sex while symptomatic[1] (n=140)			0.04
Too painful	34%	33%	
To avoid transmission	35%	16%	
Did not have partner / partner was away	20%	36%	
Other	11%	15%	
Presumed way of contracting the complaint[2] (n=286)			<0.001
Sex with spouse/steady partner	25%	24%	
Sex with casual partner	55%	5%	
Commercial sex	2%	0%	
Other than sex	3%	18%	
Don't know / it just started	15%	53%	
Median costs of first treatment[3] (n=190)	250 Ksh	150 Ksh	0.005
Government sector[2] (n=41)	250 Ksh	50 Ksh	0.08
Private sector[2] (n=126)	300 Ksh	200 Ksh	0.2
Private clinic[2] (n=75)	350 Ksh	300 Ksh	0.3
Mission/NGO clinic[2] (n=31)	235 Ksh	60 Ksh	0.06
Pharmacy[2] (n=20)	135 Ksh	100 Ksh[4]	0.5
Informal sector[2] (n=23)	150 Ksh	95 Ksh	0.6
Traditional healer[2] (n=17)	150 Ksh[4]	95 Ksh	0.2
Drug shop[2] (n=4)	10 Ksh[4]	30 Ksh[4]	0.2
Home/friend[2] (n=2)	500 Ksh[4]	100 Ksh[4]	0.3
Main barrier for people with STD to seek care[1] (n=286)			0.01
Costs	45%	33%	
Shame/fear of stigma	31%	45%	
Ignorance/do not recognise the symptoms	9%	3%	
Other	15%	19%	

[1] Tested using the Chi-squared test. [2] Tested using the Fischer exact test. [3] Tested using the Wilcoxon *W* test.
[4] n<10

STD = sexually transmitted disease.

Table 5.5 Multivariate logistic regression analyses to assess predictors of (1) seeking any care, (2) seeking care within 7 days after onset of symptoms, (3) seeking care in the formal versus the informal sector, and (4) seeking care in the government versus the private sector, for men and women with STD-related complaints in Nairobi, Kenya.

		OR (95% CI)
Seeking any care (n=285)		
Presumed way of contracting complaint: sex versus other/DK		6.1 (3.3-11.3)
Age (by 5 years)		1.5 (1.1-2.1)
Seeking care within 7 days after onset of symptoms (n=209)		
Presumed way of contracting complaint: sex versus other/DK	Men	3.8 (1.0-14.4)
	Women	0.6 (0.3-1.5)
Age (by 5 years)	Men	1.1 (0.7-1.7)
	Women	0.6 (0.4-0.8)
Seeking care in the formal versus the informal sector (n=217)		
Age (by 5 years)		2.0 (1.3-3.3)
Number of sex partners in the past 12 months		0.9 (0.8-1.0)
Seeking care in the government versus the private sector (n=186)		
Men versus women		0.4 (0.2-0.8)

STD = sexually transmitted disease; OR = odds ratio; CI = confidence interval; DK = don't know.

Discussion

This population-based study on health care seeking behaviour for STD-related complaints in Nairobi, Kenya, has shown major gender differences in the proportion seeking care and patient delay. It is alarming to find that over one third of women with STD complaints do not seek care at all and that those who seek care on average wait 6 weeks. These neglected STDs can result in serious complications and sequelae, which can lead to long-term health problems such as infertility and neonatal illnesses through congenital or peripartum infection.[24] The observed proportions of men and women not seeking care are in line with results from 2 large population-based studies in Mwanza, Tanzania, and Rakai, Uganda.[19,20] Some studies in Kenya and Tanzania have presented lower estimates, but these studies relied on lifelong recall, which could have biased reported care seeking patterns toward more serious illnesses.[15, 22]

There are several limitations to our study. Selection bias could have occurred, mainly because the absentees in our study (13% of the total eligible population) are mobile people who tend to have more risky sexual behavior.[25] The results could also have been impaired by recall bias, because the recall period of 1 year is rather long, especially for people who did not seek care. However, if we had used a shorter recall period, we would have needed an even larger sample to find sufficient people with STD complaints. Because STDs are a sensitive topic, reporting bias might also have influenced our results. Nevertheless, we feel that with a high response rate of 82% and a large proportion of people reporting they had had 1 or more STD-related symptoms (16%), our results are rather robust.

The majority of men and women sought care in the private sector. This is unfortunate, because a large facility-based study that was part of the same research project as the health care seeking study has shown that private clinics give the least adequate STD care of all types of formal healthcare facilities in Nairobi, including pharmacies.[10] The assumed high quality of care, which was one of the main reasons for people to visit private facilities, is thus a fallacy. Affordability is another misconception, because our study showed that private clinics are the most expensive providers. It is encouraging to see that a relatively large proportion of women (as compared with men) sought care in government clinics. These clinics are relatively cheap and perform best with regard to STD treatment and STD health education.[10, 11] It is likely that the introduction of user fees in government clinics in Nairobi has driven patients to seek care elsewhere.[26] This could be true especially for male patients because they pay higher fees in government clinics than women.

Men and women in our study rarely visited the informal sector for their STD-related complaints. The modest role of traditional healers in STD management is confirmed by a study among traditional healers, which was part of the same research project conducted in the same study areas in Nairobi. It was found that relatively few healers operate in these areas and that their STD caseload is rather low.[27] The limited consultation of traditional healers could be related to the urban setting of our study. Other population-based African studies reported a more substantial role for the informal sector, including traditional healers,[22] drug shops,[20] and self-medication.[21]

Our findings on choice of provider can be compared with Nairobi studies that were performed in government clinics. Male and female patients in a primary healthcare clinic who were interviewed about a previous STD complaint more often went to a government clinic than our respondents (47% and 56% vs. 15% and 28%).[15] Probably patients who are interviewed in a clinic setting are frequent visitors to this type of clinic, and they might also have a recall bias toward remembering those episodes for which they visited the clinic where they were interviewed. Another Nairobi clinic-based study also found higher proportions of STD patients who first went to government clinics.[16] Apparently, studies on health care seeking behaviour based in government clinics tend to underestimate the proportion seeking care outside the public health sector. Regarding patient delay, clinic-based data seem to be an acceptable proxy for population data.[16, 28]

Multivariate analyses showed that care seeking is triggered in case people believe that their complaint is caused by sexual intercourse. STDs are apparently considered to be serious complaints that need medical attention. Only 26% of women who were monogamous in the past year believed that their complaint was caused by sex versus 55% of the women who had more than 1 partner in the past year (p=0.01). Thus, women who are monogamous more often think that their complaints are not related to sex, and women who think their complaints are not related to sex more often do not seek care. Other studies have also found that being monogamous and having lay beliefs regarding the cause of STDs is related to prolonged patient delay.[29] The finding that women with STD-related

complaints were more often married than women without complaints confirms that for African women, marriage can be a risk factor for STD.[22, 30]

Our study has several implications for STD control policy in Nairobi. Education campaigns should be developed for the general public about early recognition of STDs and the benefits of prompt care seeking. Women should be especially targeted because they seek less care than men and wait longer before seeking care, mainly because they perceive their symptoms as mild or natural. Because most women do not believe that their symptom is an STD, symptom terminology should be used rather than disease terms in communication campaigns. Also, basic knowledge about the transmission, symptoms, prevention, and adverse effects of untreated STDs should be improved at the grassroots level. Because young people are less likely to seek care, knowledge and awareness of STDs should be part of the school curriculum, e.g., in sex and HIV/AIDS education lessons. Women could also be made aware of their risk of contracting an STD even when they are monogamously married. Furthermore, people should be encouraged to seek care at government clinics by stressing their high quality of care as well as their affordability.

Community-based programs should be supported by clinic-based interventions to improve the quality of STD care. The private sector should be the main target of these programs, because the majority of STD patients visit private clinics, and their quality of STD care can be much improved. Three factors have proven to be essential in programs to improve quality of STD care: appropriate and continuous training in syndromic management, the establishment of regular supportive supervision, and the assurance of a reliable supply of drugs.[31] Experiences from South Africa have shown that links between the private and public sector are crucial, and that barriers to improving care such as a possible reduction in income by private practitioners when adhering to syndromic management guidelines need to be addressed systematically.[32] The introduction of prepackaged syndromic management kits for STDs could also improve STD care in the private sector.[33]

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6

Effectiveness of STD case management in Nairobi, Kenya: design

Abstract

This paper describes the design of a study to assess the quality of STD case management in Nairobi. All enumerated formal sector facilities in 5 selected sublocations of Nairobi were studied, as well as neighbouring and city centre facilities frequented by people of the selected areas, and all Nairobi public clinics strengthened for STD management. Inclusion criterion was having seen at least 4 STD patients in the previous week. Methods used in this study were: observations of provider–STD patient interactions, interviews with providers, and simulated patient visits. In 142 facilities, 441 STD patients were observed and 192 providers were studied. The estimated distribution of background characteristics of providers and patients for the whole of Nairobi was nearly identical to the distribution in the study sample.

Introduction

Sexually transmitted diseases (STDs) are a major burden of disease in many developing countries, including Kenya.[1] STDs also enhance the transmission of HIV.[2] Control and prevention of STDs are therefore goals in their own right, as well as strategies in the prevention of HIV infection.[3] A study was done to assess the quality of STD case management in Nairobi with regard to history taking, examination and treatment (World Health Organization [WHO] Prevention Indicator PI6), and condom promotion and partner referral (PI7). Six different facility types were included: pharmacies, mission clinics, NGO/community-based clinics, private clinics, and public clinics strengthened and non-strengthened for STD care. This paper describes the design of the study and discusses in how far it can be seen as representative for Nairobi.

Methods

Study area

Five densely populated sublocations in Nairobi were selected for their geographical spread over the city and for their mix of socioeconomic status (SES) areas (Table 6.1). The selected area covers about a third of the inhabitants of the whole of Nairobi, with its 2.2 million inhabitants in 1999.

Enumeration of health care facilities

Within each sublocation an enumeration was performed, by walking through all the streets and listing the facilities encountered. A short questionnaire was administered in each facility, to assess the number of STD patients seen in the previous week and some other

Table 6.1 Geographical orientation, SES and population size of the 5 sublocations, which together form the study area

Sublocation	Orientation	SES			Population size[1]
		Medium	Low	Very low	
Mathare	North		X	X	163.000
Korogocho	North-East			X	183.000
Buruburu	East	X			55.000
Kibera	South	X	X	X	276.000
Kawagware	West		X		97.500

[1] Figures are derived from the 1999 census (Economic Survey 2000, Republic of Kenya. Prepared by the Central Bureau of Statistics, Ministry of Finance and Planning, Kenya).

SES = socio-economic status.

background characteristics of the facility. When the inclusion criterion of having seen 4 or more STD patients in the previous week was met, consent was asked from the head of the facility to participate in this study, including interview, observation and simulated patient method.

Facilities in neighbouring sublocations or in the city centre that were frequently visited for STDs by inhabitants from the study area, were also included in the study. These facilities were identified in a parallel community study on STD-related health care seeking behaviour, which was part of the same research project and took place in the same study area (i.e., all facilities visited last year by people who had STD complaints were included in the study, when having seen at least 4 STD patients in the previous week). Beside these neighbouring/city centre facilities, it was decided to include all Nairobi public clinics strengthened for STD care.

Sampling of providers

Within each facility, all providers who were at work on a randomly chosen day were included in the study.

Observations, interviews, simulated patient visits

Providers were observed during their patient interactions for 1 full working day, after obtaining consent from each patient. Each action of the provider was recorded on a standard checklist.[4] At the end of the observation day, providers were interviewed to assess their knowledge with regard to STD case management, using a standard questionnaire.[4]

Research assistants (qualified female nurses and male senior medical students) were trained to act as an STD patient with standardised complaints (white milky discharge, no pain) and a recent history of unsafe sex. Preceding the observations and interview, providers were visited by such a simulated patient at an unannounced time. Providers were unaware

Table 6.2 Location of different types of facility included in the study

Type of facility	within study area	neighbouring study area	city centre	other	total
Public strengthened	3	5	2	4	14
Public non-strengthened	3	2	0	0	5
Pharmacies	11	1	11	0	23
Mission clinics	5	3	0	0	8
NGO/community clinics	9	2	2	0	13
Private clinics	71	5	3	0	79

NGO = non-governmental organisation

that the patient was a simulated patient. Directly after the visit the simulated patients filled in a standard questionnaire, to record all steps undertaken by the provider during the diagnostic process and to record the drugs that were prescribed or sold.

Because it was difficult to observe/interview exactly the same providers who had before been visited by a simulated patient, not each provider was studied with all 3 methods.

Results

During the enumeration of health care facilities, 201 facilities were identified. Of these facilities, 23 refused to be assessed for eligibility, 29 were not eligible (i.e., not having seen at least 4 STD patients in the previous week), and 7 eligible facilities did not give consent for the study. A total of 142 facilities were studied, representing an estimated response rate of 85% of a total of 168 eligible facilities (assuming a similar rate of eligibility amongst the facilities which refused as amongst the assessed facilities). Non-response was highest among pharmacies (of 29 enumerates pharmacies, 6 refused, 10 were not eligible, and 2 did not give consent). Table 6.2 shows the location of the different facility types studied. Among the 14 public strengthened clinics are 3 University of Nairobi research clinics as well as the Nairobi STD referral clinic.

Table 6.3 Number of providers studied by each method, and (mean) number of patient observations, by type of facility

Type of facility	# of providers interviewed and observed	# of providers visited by simulated patients	# of patient observations	mean # of patient observations per provider
Public strengthened	19	16	121	6.4
Public non-strengthened	9	4	14	1.6
Pharmacies	21	29	40	1.9
Mission clinics	17	12	103	6.1
NGO/community clinics	19	14	49	2.6
Private clinics	80	90	114	1.4
Total	165	165	441	2.7

NGO = nongovernmental organisation.

Table 6. 4 Background characteristics of observed providers and patients for all facilities (A), facilities within study area (S), and for Nairobi as a whole (N)

Background characteristics of observed providers (%)				Background characteristics of observed STD patients (%)			
	A	S	N		A	S	N
	n=165	n=111	n=160		n=441	n=203	n=416
Sex				Sex			
Male	54	50	51	Male	41	41	42
Female	46	50	49	Female	59	59	58
Profession				Age			
Doctor	15	14	14	< 20	8	9	9
Nurse	49	54	52	20–29	58	55	56
Clinical officer	18	17	18	30–39	27	25	26
Pharmacists	6	4	5	40 +	8	10	9
Other, low education	11	12	12	Complaint			
Year of qualification				Discharge	61	63	61
1–5 years ago	28	23	25	Ulcer	17	14	16
6–10 years ago	24	29	27	Discharge + ulcer	3	3	3
11–20 years ago	28	28	28	Other	19	20	20
21 or more years ago	20	21	20	Marital status			
Attended STD in-service course				Married	61	64	63
Yes:	34	34	34	Single	39	36	37
No	66	66	67				

A total of 192 providers were included in the study, with an average of 1.4 providers per facility (range 1 – 4); 138 of them were studied with all 3 methods, 27 were only interviewed/observed and 27 were only visited by a simulated patient. Of the 165 observed providers, 27 did not see a single STD patient during a full working day. In total 441 STD-patients were observed by the 165 providers, with an average of 2.7 (range 0 – 19) per provider (Table 6.3).

Discussion

Estimates for study area and for Nairobi

We will now discuss the strategy that can be used to derive at estimates that can be regarded as representative for the selected study area. The estimates may be biased, because facilities that saw less than 4 STD cases per week were excluded from the study. However, since this group encompassed only 16% of all enumerated facilities, and a much smaller percentage of all patients, the bias will be minimal.

Since all health care facilities were enumerated, they are representative for the facilities within the study area and therefore weighed with a factor 1 (the fact that these facilities are also visited by some people from outside the area is neglected). Facilities in neighbouring

sublocations or the city centre, which are frequently visited by people from the study area are also included for the study area estimates. Since these facilities are mainly visited by people from other places (or even from whole Nairobi), they are (arbitrarily) weighted with a factor 0.333 (because the people from our study area comprise about one third of all inhabitants of Nairobi). The 4 strengthened clinics that are not located within the study area and not visited by people from the study area (Table 6.2), are left aside when deriving at estimates representative for the study area.

The selected study area can be seen as approximately representative for Nairobi, because it is spread over the city and covers a mixture of SES which reflects the composition of Nairobi (low and very low SES areas comprise the largest groups followed by medium SES, while high SES is negligible relative to the other groups). We therefore feel that estimates for the study area can also be regarded as approximately valid for Nairobi as a whole. Table 6.4 shows the background characteristics of observed providers and patients for all facilities, for facilities located within the study area, and for Nairobi as a whole. The table shows that differences between the 3 sets of outcomes are only small.

Conclusion

A health care facility study in a large area appeared to be feasible, also in private sector facilities, with a low non-response rate of 15%. Differences between findings for the study sample and estimates for the whole of Nairobi are negligible for background characteristics of observed providers and patients.

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7

Quality of STD case management in Nairobi, Kenya: a comparison among different types of healthcare facilities

Acknowledgements

Abstract

Background: In Nairobi, the prevalence for sexually transmitted diseases (STDs) among attendees at antenatal and family planning clinics is substantial, but knowledge about the quality of STD case management is scarce.

Goal: To assess quality of STD case management in Nairobi healthcare facilities.

Study Design: All the facilities in five sublocations were enumerated. In 142 facilities, 165 providers were interviewed, observed during 441 interactions with patients who had STDs, and visited by a simulated patient.

Results: For observations of patients with STDs, correct history-taking ranged from 60% to 92% among the various types of facilities, correct examination from 31% to 66%, and correct treatment from 30% to 75%. The percentage of correctness for all three aspects (World Health Organization prevention indicator 6) varied between 14% and 48%. Public clinics equipped for STD care performed best in all aspects, whereas treatment was poorest in pharmacies and private clinics. The providers trained in STD management performed better than those without training.

Conclusions: Quality of STD case management was unsatisfactory except in public STD-equipped clinics. This indicates the need for improvement by interventions such as further training in syndromic management, improved supervision, and the introduction of pre-packaged syndromic management kits.

Introduction

Sexually transmitted diseases (STDs) are a major burden of disease in many developing countries.[1, 2] Additionally, they enhance the transmission of HIV.[3, 4] Treatment of STDs is therefore both a goal in its own right and a strategy for the prevention of HIV infection.[5] Unfortunately, the quality of STD case management in developing countries often is unsatisfactory.[6–8]

In Kenya, the prevalence for STDs in the general Nairobi population is unknown. Studies among subpopulations have shown STD infection rates to be substantial.[9–11] Although STD prevalences among female attendees at antenatal and family planning clinics in Nairobi declined between 1992 and 1999, they still were as high as 2% for gonorrhoea, 3% for syphilis, and 17% for chlamydia in 1999. During the same period, HIV prevalence increased from 15% to 19%.[12] Knowledge about the quality of STD case management in Kenya is scarce. One study was conducted in a rural area (Kisumu district, unpublished), but not much is known about the capital, Nairobi, where patients with STDs seek care in the public, private, and informal sectors.[13]

This report describes the results of a study to assess the quality of STD case management in the healthcare facilities of five Nairobi sublocations. Provider performance was assessed through patient observations, interviews, and simulated patient visits. Six types of facilities are distinguished and compared. In the private sector, pharmacies, mission clinics, and nongovernmental organisation (NGO) or community-based clinics (operated by international NGOs such as the Crescent Medical Aid or by community self-help groups) are distinguished from private clinics owned by individuals (hereafter termed 'private clinics'). In the public sector, a distinction is made between clinics equipped and those unequipped for STD care (locally termed strengthened and non-strengthened clinics, respectively). Equipped or strengthened clinics, which serve as STD referral clinics for other public facilities, are clinics staffed by providers trained in syndromic management by the Ministry of Health (supported by donors such as the Belgian government and the Canadian International Development Agency [CIDA]) in the mid-1990s, in which a regular supply of STD drug kits was established. Besides comparisons between different types of facilities, providers trained in STD management were compared with untrained providers, and doctors were compared with nurses and clinical officers.

We know of no previous studies comparing different types of facilities by the quality of their STD management. Most studies in developing countries have focused exclusively on clinics in the public sector,[7, 8, 14, 15] on pharmacies,[16, 17] or on the private sector.[18, 19] Two studies included both public and private clinics, but did not compare their performance.[6,20] Only a few studies have used simulated patients in assessing quality of STD care.[7, 16, 17, 21]

In this report, quality is defined as the degree to which STD case management is correct according to World Health Organization (WHO) criteria during provider–patient observations. These WHO criteria are described in a protocol for the assessment of STD case management, which has been used in most studies on quality of STD care.[6–8,14,15,20–22] The aspects of STD case management considered in this report are history-taking, physical examination, and treatment. Education aspects such as condom promotion, contact tracing, compliance, and counselling (the four C's) are reported separately.[23]

Methods

Enumeration

Five densely populated sublocations in Nairobi were selected for this study: Mathare and Korogocho in the north, Buruburu in the east, Kibera in the south, and Kawagware in the west (Figure 7.1). These areas contain approximately one third of the inhabitants in Nairobi, a city with an estimated population of 2.5 million. The sublocations were selected to include a mix of medium, low, and very low socio-economic areas, and to be spread geographically over the city.[24] Within each sublocation, the researchers performed an enumeration by walking through all the streets and listing the facilities encountered. In each facility a short questionnaire was administered to assess the type of facility, the

1 = Kawagware
3 Pharmacies
1 Mission clinic
14 Private clinics

2 = Kibera
5 Public non-strengthened
4 Pharmacies
2 Mission clinics
4 NGO/comm. based clinics
33 Private clinics

3 = Mathare
1 Pharmacy
4 Mission clinics
3 NGO/comm. based clinics
17 Private clinics

4 = Korogocho
1 Mission clinic
3 NGO/comm. based clinics
8 Private clinics

5 = Buruburu
3 Pharmacies
4 Private clinics

6 = City centre
12 Pharmacies
3 NGO/comm. based clinics
3 Private clinics

● 14 Public strengthened clinics

Figure 7.1 Schematic map of Nairobi, with the location of the five sampled areas, the city center, and the public clinics equipped for sexually transmitted diseases. The overview shows the number of studied facilities in each area per type of facility.

number of patients with STDs seen in the previous week, and some other background characteristics of the facility. The inclusion criterion required that four or more patients with STDs had been seen in the preceding week. When this criterion had been met, consent was asked from the head of the facility for its participation in the study.

Facilities in neighbouring areas and the city centre that inhabitants from the selected sublocations visited frequently for STDs also were studied if they met the inclusion criterion. These facilities were identified in a community study on STD-related healthcare-seeking behaviour, which was part of the same research project. Additionally, of the 45 Nairobi City Council public clinics, the 10 equipped for STD care were included in the study, along with three university research clinics and the Nairobi STD referral clinic (Figure 7.1). Within each facility, all the providers present on a randomly chosen day were studied.

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Provider–patient observations

Providers were approached by a research assistant (a qualified nurse or senior medical student), who observed their patient interactions throughout one full working day. In cases of STD, the consent of the patients was asked for the research assistant to be present during the consultation and physical examination. For each patient with STD, research assistants recorded all the actions of the provider and the background characteristics of the patient using a standard questionnaire based on the WHO protocol.[22]

Interview

Interviews were used to assess providers' knowledge of STD case management.[22] These interviews followed a structured questionnaire adapted from the WHO protocol. They covered background characteristics of the provider (profession, training), the usual steps taken in the management of STDs, and the first-choice treatment given for particular syndromic and etiologic diagnoses. The interview was conducted after the observations so it would not influence the performance of the providers during the observations.

Simulated patient visit

The simulated patient visit was used to assess the actual daily practice of providers, as opposed to 'optimal performance', which was measured during patient observations when providers knew they were being studied. Male and female research assistants were trained to act as simulated or dummy patients with standardized STD conditions (white milky discharge, no pain) and a recent history of unsafe sex. The simulated patients visited the providers at an unannounced time and bought the drugs the providers prescribed. The providers were not aware that the patient was not a real patient. Because the research assistants did not have actual STD symptoms, they avoided or refused being examined, allowing any specimen to be taken for tests, or taking drugs on the spot by injection or otherwise.

Directly after the visit, the simulated patients completed a standardized questionnaire, recording all the steps undertaken by the provider during the diagnostic process and the drugs prescribed or sold. Where possible, the simulated patient visit preceded the observations and interview so these would not influence the performance of the provider during the simulated patient visit.

Data collection and analysis

Data collection took place from February until May 1999. Problems were encountered in finding the same provider at different times. As a result, not all the providers were studied with all three methods. Difficulties inherent to simulated patient method were anticipated and addressed during the training of the research assistants (i.e., how to avoid or refuse being physically examined, allowing samples to be taken, or being forced to take drugs at

the spot). The method proved to be feasible, with only one provider expressing doubts about the genuineness of the simulated patient.

All interviews, observations, and simulated patient forms were entered daily into Epi Info 6. As an exception to WHO protocol, female patients with reports of discharge were included in the analyses of provider–patient observations. Analyses consisting of cross-tabulations, Chi-squared calculations, and logistic regression analyses for calculation of 95% CI were performed with SPSS PC Version 8.0. Some providers saw more than one patient during the observations, so these observations were not statistically independent. Therefore, Chi-squared tests during the observations were adjusted to account for correlations between observations that result from the clustering of patients with providers. To accomplish this, the Generalised Estimated Equations (GEE) approach in logistic regression of Proc Genmod in SAS Version 6.12 TS level 0060 was used.

Outcome measures for observations of patients with STDs

Correct history-taking. According to WHO, correct history-taking involves asking questions on the nature of symptoms, the onset or duration of symptoms, and recent sexual contacts.[22] Besides these aspects, we also assessed whether a provider asked a patient about the history of previous STDs and about the history of care-seeking for the current problem.

Correct examination. Correct examination of patients with STD involves fully exposed genitals, with females lying down. Patients should be examined subsequently for discharge and lesions, with the foreskin of uncircumcised male patients retracted and the labia of female patients separated and inspected.[22] Additionally, we assessed whether a provider performed a speculum and/or a bimanual examination on the female patients. Because pharmacies have only a drug-dispensing role, they were excluded from the analysis regarding correctness of examination.

Correct treatment. In cases for which a provider relied on laboratory test results for diagnosis, treatment was assessed using guidelines for etiologic diagnosis (i.e., the determined causative agent had to be treated correctly). In all other cases, correct treatment was assessed using guidelines for syndromic diagnosis. Syndromic management of STDs was introduced in Kenya during the mid-1990s by training providers mostly from the public sector, and by developing and widely distributing a syndromic management flowchart. According to the flowchart, for vaginal discharge in female patients, trichomonas and candidiasis must be treated first. If symptoms do not disappear, gonorrhoea and chlamydia must be treated. In our assessment, we considered both therapies correct, regardless whether the patient was a first-time or follow-up patient. For urethritis in male patients, gonorrhoea and chlamydia had to be treated correctly. Correct treatment of syphilis and chancroid was required for genital ulcer disease in male and

female patients. In cases of incorrect syndromic treatment, we also recorded whether one causative agent was treated correctly (i.e., clinical management without laboratory tests).

Correct treatment was assessed using national and WHO guidelines as criteria.[25, 26] Treatment that adhered to either of these guidelines was considered correct, with abundant doses and durations also regarded as correct. Short doses and durations were considered incorrect unless they proved sufficient to clear the aetiology or syndrome according to East African guidelines.[27] Drug regimens with developed resistance in Kenya, as determined by national/East African standards, were considered incorrect, even if they fulfilled WHO guidelines.[27] Providers were assessed for the drug therapy they prescribed, even if the patient did not have enough money and left the clinic with fewer drugs than prescribed.

Prevention indicator 6. In the WHO protocol, prevention indicator 6 (PI6) is described as the proportion of patients with STDs for whom history-taking, examination, and treatment are all correct.[22] Because pharmacies are not assessed for correct examination, PI6 could not be calculated for this type of facility. It should be noted that for PI6 to be correct, examination had to be performed, regardless whether a provider had given etiologic or syndromic treatment.

Results

During the enumeration, 201 healthcare facilities were identified. Of these facilities, 23 refused to be studied before their eligibility was assessed, 29 were not eligible (i.e., were visited by fewer than four patients with STDs during the week before the enumeration), and 7 did not give consent for the study. Altogether, 142 of 168 eligible facilities were studied (Figure 7.1), representing a response rate of 85% if a similar rate of eligibility is assumed for the facilities that refused. Refusal was highest among pharmacies.

A total of 192 providers were included in the study, averaging 1.4 providers (range 1–4 providers) per facility. Because not all providers could be studied with each method, 138 were studied with all three methods, 27 only with interview and observation, and 27 only with a simulated patient visit. Of the 165 providers observed during patient interactions, 27 did not see a single patient with STD during a full working day. In all, 441 patients with STDs were observed, averaging 2.7 patients (range 0–19 patients) per provider.

The distribution of facilities, providers, and patient observations over the different types of facilities is given in Table 7.1. Private clinics owned by individuals account for about half of the total facilities and providers, but only one fourth of the total patient observations. Public clinics equipped for STDs and mission clinics see many patients per provider. They each provide approximately one tenth of all the facilities and providers, but one fourth of the patient observations. Public clinics not equipped for STD care comprise the smallest sample size in terms of facility, provider, and patient observation. Because

Table 7.1 Number of facilities, providers and patient observations by type of facility

Health sector	Type of facility	Facilities[1]		Providers[2]		Patient observations	
		n	(%)	n	(%)	n	(%)
Public	Strengthened	14	(10)	21	(11)	121	(27)
	Non-strengthened	5	(4)	9	(5)	14	(3)
Private	Pharmacies	23	(16)	30	(16)	40	(9)
	Mission clinics	8	(6)	18	(9)	103	(23)
	NGO/community-based clinics	13	(9)	19	(10)	49	(11)
	Private clinics[3]	79	(56)	95	(50)	114	(26)
Total		142	(100)	192	(100)	441	(100)

[1] Facilities at which at least one provider was observed, interviewed, or visited by a simulated patient.

[2] Providers who were observed, interviewed, or visited by a simulated patient.

[3] Owned by individuals.

NGO = nongovernmental organisation.

they normally refer patients with STDs to the equipped clinics, they did not meet the study inclusion criterion of having managed at least four patients with STD in 1 week.

Of the observed providers, 49% were nurses, 18% clinical officers, 15% doctors, and 11% pharmacists/pharmacy technologists. One third of the providers had taken an in-service course on STD management. Of the observed patients with STDs, most were married (61%) females (59%), 20 to 29 years of age (58%), who had problems involving discharge without ulcers (61%).[24]

Comparison of facilities during observations of patients with STDs

Table 7.2 shows the proportion of the 441 patients with STDs who were managed correctly in terms of history-taking, examination, and treatment. The score ranges for the different type of facilities also are shown. The first part of Table 7.3 gives the WHO summary scores for history-taking, examination, treatment, and PI6 for the different types of facilities.

Correct history-taking. Fairly high scores were obtained for the three variables in the WHO criteria for correct history-taking: inquiry about the nature of symptoms, their onset or duration, and recent sexual contacts (Table 7.2). The performance on inquiry about previous STDs and care-seeking for the current problem was worse, with no type of facility scoring higher than 50% for the latter variable. The WHO summary score for correct history-taking was between 60% and 92%, with no significant differences between types of facilities. There were no significant differences between the management of male and female patients, between the performance of male and female providers, or between the performance of providers on same or opposite sex patients for any of the variables involved in correct history-taking.

Table 7.2 Quality of STD case management during patient observations (n=441); Items and summary scores for history-taking, examination and treatment[1]

Observed task	Proportion managed correctly (%)	Proportions among the 6 types of facilities	
		Range (%)	P-value [2]
History-taking			
1. Nature of symptoms	98	86 – 100	0.61[3]
2. Onset/duration of symptoms	96	86 – 98	0.54
3. Recent sexual contacts	83	63 – 93	0.30
4. History of previous STDs	68	35 – 88	0.05
5. History of care-seeking for current complaint	39	24 – 50	0.51
Summary score history taking (1+2+3)	81	60 – 92	0.28
Physical examination (n=376)[4]			
1. Examination performed	69	54 – 80	0.10
2. Genitals fully exposed	57	44 – 71	0.14
3. Genitals examined for discharge and lesions	57	31 – 71	0.26
4. Speculum examination performed on female patients[5]	10	0 – 16	0.50[3]
5. Bimanual examination performed on female patients[5]	24	2 – 38	0.03
Summary score physical examination (1+2+3)	51	31 – 66	0.13
Treatment			
1. Etiologic treatment (30% of cases, range 3-60%)	21	3 – 41	<0.01
2. Syndromic treatment (70% of cases, range 40-97%)	33	9 – 63	<0.001
3. Incorrect syndromic treatment, 1 agent treated correctly	29	7 – 55	<0.01
Summary score treatment (1 or 2)	54	30 – 75	<0.001

[1] Summary scores are according to World Health Organization (WHO) criteria.

[2] Chi-squared p-values, adjusted by the Generalised Estimated Equations (GEE) approach.

[3] Because in the GEE method the p-value cannot be calculated when 100% or 0% of cases are correct, the outcome of one observation was changed. Therefore, the given GEE p-value is an approximation.

[4] For physical examination, patient observations in pharmacies were excluded (38 cases, none was examined), as well as patients who refused to be examined (14 cases) or did not allow the observing research assistant to be present during the physical examination (13 cases).

[5] Altogether, 228 of the 376 patients were female; 65% (range 44-78%) of whom were physically examined.

Correct examination. For physical examination, the scores generally were lower than for history-taking. Approximately two thirds of all the patients with STDs were physically examined, and about half were examined correctly according to WHO criteria (Table 7.2). Differences between types of facilities were not significant. Overall, male patients were examined physically more often than female patients (76% versus 65%; p=0.015), regardless of the provider's gender. For female patients, a speculum and bimanual examination were performed rarely (10% and 24% of cases, respectively), especially in mission clinics (0% and 2%, respectively).

Correct treatment. Approximately 30% of the patients with STDs were treated on the basis of an etiologic diagnosis (Table 7.2). This proportion varied largely between types of facilities, with mission and private clinics having the highest proportions (60% and 35%,

respectively), and pharmacies the lowest (3%). Overall, 54% of the patients were treated correctly, with a large variation between facility types (p< 0.001): both types of public clinics performed best (75% and 71%, respectively), whereas pharmacies and private clinics performed worst (38% and 30% respectively, first part of Table 7.3). Although syndromic treatment contributed more to the proportion of correct treatments than etiologic treatment (33% versus 21%, respectively; Table 7.2), the providers performed better when treatment was given on the basis of an etiologic diagnosis than when it was based on a syndromic diagnosis (68% versus 47%, respectively). Regarding incorrect syndromic management with one agent treated correctly, the proportion was highest for pharmacies and private clinics (55% and 41%, respectively), and lowest for public clinics equipped for STD care (7%).

Prevention indicator 6. The overall score for PI6 was 27%, meaning that only 27% (95% CI, 23–32%) of the 441 observed patients with STDs were managed in an appropriate way. There was a large variation between facility types (p=0.01). Public clinics equipped for STD care had the highest PI6 score (48%), followed by NGO or community-based clinics (28%). The remaining three types had scores between 14% and 18%. These low scores were mostly the result of incorrect examination or incorrect treatment.

The facilities on which the results of Tables 7.2 and 7.3 were based did not precisely represent the sampled study areas because STD-equipped public clinics from all over Nairobi were included, as well as facilities in the city centre or those neighbouring the study areas (see Methods section). To check the robustness of our results, we tried to derive more precise estimates representing STD care for people from the study areas. Therefore, we weighted city centre/neighbouring facilities with a factor 0.333 because the population size of the study areas was approximately one third that of Nairobi. We also excluded the STD-equipped public clinics not visited frequently by people from the study areas.[24] As a result, the summary score for history-taking remained at 81%, whereas the score shifted from 51% to 46% for examination, from 54% to 47% for treatment, and from 27% to 21% for PI6. Therefore, the total scores given in Table 7.2 and the first part of Table 7.3 are slightly optimistic for the study areas. This is the case also for Nairobi as a whole, because the study areas can be seen as a representative sample of Nairobi.

Comparison of facilities during interviews and simulated patient visits

The middle and last parts of Table 7.3 show the results of the interview and simulated patient methods. Some outcome measures were calculated a bit differently than for the observation method. For the interviews, providers were asked to give the first-choice treatment they usually prescribed for four different STD aetiologies (gonorrhoea, chlamydia, primary syphilis, and chancroid) and four STD syndromes in absence of a definitive etiologic diagnosis (urethral discharge, vaginal discharge, and genital ulcer in male and female patients). Correct treatment was assessed for each of these eight conditions and summarized by the proportion correct for each provider. For the providers

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Table 7.3 Quality of STD case management during STD patient observations, interviews and simulated patient visits. Summary scores for history taking, examination, treatment, and PI6, by type of facility[1]

Type of facility	n	Correct history-taking (%)	Correct examination (%)	Correct treatment (%)	PI6 (95% CI) (%)
STD patient observations (n=441)[2]					
Public strengthened	121	92	66	75	48 (39-57)
Public non-strengthened	14	79	31	71	15 (4-45)
Pharmacies	40	60	n.a.	38	n.a.
Mission clinics	103	79	38	54	14 (8-22)
NGO/Community based	49	74	49	61	28 (17-42)
Private clinics	114	84	52	30	18 (12-27)
Total	441	81	51	54	27 (23-32)
P-value[3]		0.28	0.13	<0.001	0.01
Interviews with providers (n=165)[4]					
Public strengthened	19	100	100	79	79 (63-89)
Public non-strengthened	9	89	78	76	54 (31-75)
Pharmacies	21	76	n.a.	39	n.a.
Mission clinics	17	88	71	63	14 (6-30)
NGO/Community based	19	79	90	70	51%(35-67)
Private clinics	80	93	89	37	33 (26-41)
Total	165	89	88	51	40 (35-46)
P-value[3]		0.11	0.09	<0.001[4]	<0.001[c]
Simulated patient visit (n=165)[5]					
Public strengthened	16	75	44	75	31 (14-57)
Public non-strengthened	4	100	50	75	25 (1-91)
Pharmacies	29	31	n.a.	45	n.a.
Mission clinics	12	50	58	50	25 (8-55)
NGO/Community based	14	79	29	64	14 (4-43)
Private clinics	90	68	33	30	11 (6-19)
Total	165	62	37	42	15 (10-23)
P-value[3]		<0.01	0.42	<0.01	0.24

[1] Summary scores and PI6 are according to World Health Organization (WHO) criteria.

[2] For observations, sample sizes differ for the variable correct examination, and thus also for PI6 (see footnote 4, Table 7.2): public clinics strengthened for STD care (n=112), public clinics non-strengthened (n=13), mission clinics (n=101), NGO/community based facilities (n=47), private clinics (n=103), total (n=376).

[3] Chi-squared p-values; for the observations these are adjusted by the generalised estimated equations (GEE) approach.

[4] For interviews, correct treatment for each provider is the average of scores on the 4 or 8 questioned syndromes and/or aetiologies, depending on what type of treatment a provider normally gives. This average per provider was used to calculate PI6. Because the outcomes for correct treatment and PI6 are means, and thus not dichotomous, the given p-values are one-way analysis of variance (ANOVA) in stead of Chi-squared p-values, and the 95% CI is corrected by the Williams procedure.

[5] For simulated patient visits, the score whether an examination was requested or not was used to calculate PI6.

PI6 = prevention indicator 6; NGO = nongovernmental organisation; n.a. = not applicable.

who said they normally give only etiologic or only syndromic treatment, only the four relevant conditions were summarized. The final treatment score thus reflects the average knowledge of a provider for the approach he or she normally uses. Subsequently, PI6 was calculated using the proportion score for treatment. For the simulated patients, the only possible assessment was whether a provider requested an examination or not because these patients had to avoid physical examination. This information was used to calculate PI6.

During the interviews, there were significant differences between types of facilities for correct treatment and PI6. The STD-equipped public clinics again scored highest, whereas the pharmacies and private clinics again scored lowest (Table 7.3 [middle]). The same was true for correct treatment during the simulated patient visits (Table 7.3 [bottom]). There also were significant differences during the simulated patient visits for history-taking, with the pharmacies scoring the lowest, followed by the mission clinics.

When the three methods for each type of facility were compared, a pattern could be seen for history-taking, examination, and PI6: The interview scores were higher than the observation scores, whereas the simulated patient scores generally were the lowest. Therefore, the knowledge of providers during the interviews was adequate, whereas performance during the observations was less optimal, and daily practice during the simulated patient visits was the least. For history-taking, the discrepancy was largest for the pharmacies (76%, 60%, and 31%, respectively), whereas for the examination, the discrepancy was largest for the private clinics (89%, 52%, and 33%, respectively) and NGO or community-based clinics (90%, 49%, and 29%, respectively).

Concerning treatment, the differences between the three methods were relatively small. Both types of public clinics, which showed good knowledge during the interviews, also performed well during daily practice. The pharmacies and private clinics, with little knowledge during the interviews, also performed rather poorly during daily care.

Comparison of providers during all three methods

Besides comparing types of facilities, it was interesting to compare providers. Table 7.4 compares the providers who followed an in-service course on STD management for all three methods with those who did not. An in-service course on STD management significantly improved knowledge of the providers on history-taking, treatment and PI6 (interviews), performance on examination, treatment and PI6 (observations), and daily practice during treatment (simulated patient visits, Table 7.4).

Providers also can be compared on the basis of their profession. When doctors (n=69) were compared with nurses (n=228) and clinical officers (n=86) during the observations, the doctors performed significantly better in terms of correct examinations (71% versus 45% and 53%; p=0.02). This caused them to score slightly, but not significantly, higher on PI6 (37% versus 24% and 30%; p=0.10). Regarding treatment, which is the most clinical

Table 7.4 Quality of STD case management during STD patient observations, interviews and simulated patient visits: comparison of providers who attended an in-service course on STD management with those who did not, regarding summary scores for history taking, examination, treatment, and PI6[1]

	Attended STD in-service course (%)	Did not attend STD in-service course (%)	P-value[2]
Observations (n=440)[3]	n=203	n=237	
Correct history-taking	89	75	0.19
Correct examination[4]	62	41	0.03
Correct treatment	61	47	0.03
PI6[4]	37	18	0.01
Interviews (n=165)	n=56	n=109	
Correct history-taking	96	85	0.03
Correct examination[5]	91	86	0.40
Correct treatment	61	45	<0.01[6]
PI6[5]	56	32	<0.01[6]
Simulated patient visits (n=138)[7]	n=49	n=89	
Correct history-taking	74	58	0.08
Correct examination[8]	40	39	0.87
Correct treatment	53	35	0.04
PI6[8]	19	14	0.44

[1] Summary scores and PI6 are according to World Health Organization (WHO) criteria.

[2] Chi-squared p-values; for the observations these are adjusted by the Generalised Estimated Equations (GEE) approach.

[3] For one observation it was unknown whether the provider had attended an STD in-service course.

[4] For the observations, 64 cases were excluded for correct examination and PI6 (16 by trained, 48 by untrained providers), either because patients refused to be examined or observed during examination, or because the observation was performed in pharmacies.

[5] For the interviews, 21 cases in pharmacies were excluded for calculations of correct examinations and PI6 (3 trained, 18 untrained providers).

[6] Because the outcomes for correct treatment and PI6 are means (see footnote 4, Table 3), the given p-values are one-way analysis of variance (ANOVA) instead of Chi-squared p-values.

[7] For 27 simulated patient visits it was unknown whether the provider had attended an STD in-service course.

[8] For the simulated patient visits, 19 cases in pharmacies were excluded for calculations of correct examinations and PI6 (2 trained, 17 untrained providers).

PI6 = prevention indicator 6.

aspect of STD case management, doctors did not perform any better than nurses or clinical officers (55% versus 57% and 56%; p=0.25). During the interviews and simulated patient visits, no significant differences among doctors, nurses, and clinical officers were observed.

Because the providers were not aware that they were being studied by simulated patients, this method was appropriate for assessing whether patients with STDs are stigmatised or made to feel unwelcome (also called 'the rejection phenomenon'). In the 165 simulated patient visits in our study, only 5% of the patients said that the provider was unfriendly or seemed to despise or condemn them for contracting an STD. The proportion was highest

for the public sector (13% for STD-equipped and 25% for STD-unequipped clinics), but the numbers were very small for drawing conclusions (2 of 16 cases and 1 of 4 cases, respectively). Privacy seemed to be a bigger problem, with 19% of the simulated patients indicating a lack of privacy. When pharmacies (no privacy indicated for 38%) were excluded, 15% of the simulated patients still indicated a lack of privacy.

Discussion

In this report, three methods for assessing the quality of STD care are compared: observation of provider–patient interactions, interviews, and simulated patient visits. Several aspects must be taken into account when the results of the three methods are compared.

First, not all the providers who were observed and interviewed were also visited by a simulated patient, and vice versa. However, the findings were the same when the analysis was restricted to the 114 providers studied with all three methods. Second, although there was only one score per provider for the interview and simulated patient method, the number of patient observations varied between providers. This means that the providers with many patients had a larger share in the observations than in the interviews and simulations. However, the results are similar when an average observation score is used for each provider. Third, the simulated patients were not quite comparable with the observed patients because they presented with a standard history of STD problems and unsafe sex, without any vagueness, complications, or inconsistencies. Furthermore, they refused examination, sample-taking, and injections. Therefore, they might have been treated differently than the average observed patient. This means that the observed differences in performance between the simulated and real patients might have resulted from the patients not being comparable. However, differences between real and simulated patients would not be expected to play a role in history-taking. The fact that even history-taking was scored better in real patients than simulated patients (81% versus 62%) indicates that providers score better during observations because they know they are being observed.

According to the observations of patients with STDs in this study, the overall quality of STD case management in Nairobi is unsatisfactory, except in public clinics equipped for STD care. The study findings showed physical examination and treatment to be most problematic, causing the overall WHO indicator for STD management PI6 to be lower than 50% for all types of facilities. The low scores on examination resulted mainly from patients not being examined at all. Regarding treatment, private clinics and pharmacies scored low because often only one causative agent of an STD syndrome was treated in the absence of laboratory results. This type of management, common before syndromic management was introduced, apparently is still widespread in Nairobi despite its lower effectiveness.[28–30]

Scores for history-taking and examination were highest during the interview, lower during the observation, and lowest during the simulated patient visit. This implies that providers have a fairly good knowledge of these aspects, but that they are not translating it into daily practice. A possible reason for this is the high workload some providers are facing. For treatment, pharmacies and private clinics scored below 40% even during the interview, which indicates that knowledge of syndromic treatment is highly insufficient in these facilities.

The overall score for STD case management as measured by PI6 varied from 14% to 48% during patient observations, and from 11% to 31% during simulated patient visits. To be fully cured and not immediately reinfected, correctly managed patients must comply with the prescribed medication, come back to receive alternative treatment if the problem persists, have their sexual partners treated in a correct way, and use condoms or abstain from sex during the course of their own and their partner's treatment. Therefore, the proportion of patients eventually cured will be alarmingly marginal. This shows that aspects of health education such as condom use, contact tracing, compliance, and counselling are crucial in the prevention and control of STD/HIV. These aspects also were assessed in the current study, but are reported separately.[23]

The study findings indicate the need for action to improve STD care in the private sector of Nairobi. Because knowledge is insufficient, using private clinics and pharmacies to train providers in syndromic management is highly recommended. Several studies have proved that training can significantly improve the performance of providers in STD management, at least in the short term.[17, 19, 31] To sustain provider behaviour change, training should be an ongoing process with follow-up evaluation and refresher courses.[17] In this study, the differences found between providers trained and those untrained in STD management proves that training indeed has a positive impact on both the knowledge and performance of providers. This finding confirms the importance of further provider training in Nairobi.

Alternative interventions are needed to complement training, especially to improve history-taking and examination. Several studies have shown that inadequate supervision is one of the factors contributing to low quality of STD care.[32, 33] Considering that in Guinea-Conakry PI6 increased from 7% to 48% within 2 years by improving supervision, this might be an effective intervention strategy in Nairobi as well.[34] An additional option, especially for pharmacies and the private sector, is the development and social marketing of pre-packaged syndromic management kits for STD. These kits, which contain drugs for one STD syndrome, condoms, and partner notification cards, have proved to be feasible and acceptable for health workers and patients in several pilot studies.[35–37] Health workers believed the packages improved STD management by making treatment easier and saving time.[35] In a case–control study, patients using these kits had significantly higher self-reported cure rates than their controls (84% versus 47%).[36]

To which facilities can interventions best be targeted? Because facilities differ most significantly from each other in terms of treatment, interventions can best be targeted to pharmacies and private clinics, which score lowest on treatment. For interventions to be cost effective, the STD caseload per provider also must be taken into account. Because pharmacies have a higher daily STD caseload per provider than private facilities, as determined by the number of patient observations, it could be especially cost effective to target interventions to pharmacies. Training in syndromic management and the introduction of pre-packaged STD syndromic management kits would be important interventions for pharmacies because they do not perform examinations or laboratory tests. For effective implementation of any intervention targeted to this group, it also will be crucial to have the support of organizations such as the Kenyan pharmacy association.

Improved STD care may eventually lead to improved healthcare-seeking behaviour of patients. A complementary approach to improve STD control focuses interventions directly on the patient's health-seeking behaviour. If more patients with STDs seek care at facilities with high-quality care, the overall cure rate of STDs improves. For the Nairobi situation, this means that patients with STDs should be convinced to go to public clinics equipped for STD care. However, patients generally have the idea that quality of care is highest in private facilities, which are more expensive than public facilities. Therefore, Information, Education and Communication (IEC) activities should focus on raising quality awareness among patients with STDs and on changing their health-seeking behaviour. These interventions should go hand in hand with interventions focusing on healthcare providers to improve STD case management.

Although it is difficult to compare the quality of STD case management across countries,[38] an attempt is made to compare the Nairobi study with studies using similar outcome measures. A study in Malawi, where public and private practitioners were observed, found the same rate for history-taking as in Nairobi (81%), but lower rates for examination (46% versus 51%), treatment (13% versus 54%), and PI6 (11% versus 27%).[6] A study in South Africa among public sector providers using simulated patients found a score of 45% for correct history-taking (75% to 100% in Nairobi public clinics), 19% for examination offered (44% to 50% in Nairobi), and 41% for correct treatment (75% in Nairobi).[7] Studies in Peru and Nepal each found the percentage of simulated patients who received correct syndromic treatment in pharmacies to be only 1% (45% in Nairobi).[16, 17] Findings showed that PI6 scores based on observations were 12% in the public and private sectors in India (27% in Nairobi) and 4% in public clinics in Ethiopia (15% to 48% in Nairobi). These comparisons indicate that the quality of STD case management in Nairobi generally is better than in other studied developing countries.

In retrospect, this study could have been improved in several ways. We mention these so others can build on our experience. First, more providers could have been studied by all three methods if the identity of the providers visited by the simulated patients had been monitored. If the simulated patient had asked the provider's name, then the

interviewer/observer could have made an appointment with the facility on a day when this specific provider was at work. Second, the gap between knowledge and practice could have been anticipated by explicitly asking providers in the interview to identify barriers to translating knowledge into practice. This would have given fruitful suggestions for the development of strategies to address the gap between knowledge and practice. Third, the power of the comparative analyses could have been increased if resources had allowed us to sample more than five study areas.

In conclusion, although STD case management in Nairobi measures up to that of other developing countries, only 27% of the observed patients with STDs are being managed correctly. This indicates that the overall cure rate of patients with STDs in Nairobi can be increased. Recommended interventions are ongoing training in syndromic management in the private sector as well as improved supervision and the introduction of pre-packaged syndromic management kits.

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8

Quality of health education during STD case management in Nairobi, Kenya

Acknowledgements

Abstract

Quality of health education during STD case management in Nairobi was assessed in 142 healthcare facilities, through interviews of 165 providers, observation of 441 STD patients managed by these providers, and 165 visits of simulated patients. For observations, scores were high for education on contact treatment (74-80%) and compliance (83%), but unsatisfactory for counselling (52%) and condom promotion (20-41%). The World Health Organization (WHO) indicator for STD case management Prevention Indicator 7 (PI7) (condom promotion plus contact treatment) was poor (38%). Public clinics strengthened for STD care generally performed best, whereas pharmacies and mission clinics performed worst. Compared with observations, scores were higher during interviews and lower during simulated patient visits, indicating that knowledge was not fully translated into practice. Interventions to improve the presently unsatisfactory service quality would be wide distribution of health education materials, ongoing training and supervision of providers, implementation of STD management checklists, and the introduction of pre-packaged kits for STD management.

Introduction

Sexually transmitted diseases are a major public health problem in Kenya. Although the population prevalences are unknown, infection rates among antenatal and family planning clinics are found to be substantial; 5-9% for *Neisseria gonorrhoeae* and c*hlamydia trachomatis,*[1, 2] 4% for syphilis[3] and 47-56% for vaginal infections, either trichomoniasis or candidiasis.[2] Besides being a serious health problem, STDs are co-factors in the spread of HIV.[4, 5] Therefore, STD control is also a strategy in the prevention of HIV infections.[6]

Although the National AIDS/STD Control Program has been ongoing in Kenya for nearly a decade, information on the quality of STD case management is scarce. The few studies which have been done indicate the quality of STD case management to be poor, with health education aspects often neglected.[7-9] However, nothing is known about the quality of STD health education in Nairobi.

According to Kenyan national guidelines, health education during STD case management should include the '4 Cs': promoting condom use, contact treatment (also called partner referral), compliance, and providing counselling to patients.[10] These aspects of health education are essential in controlling the spread of STD/HIV. Education on compliance is a prerequisite in the cure of a patient, by convincing the patient to take all the drugs in the prescribed manner. Contact treatment is one of the few effective ways in which asymptomatic STD cases are managed, and therefore has a major public health effect. Advice on condom use not only prevents STDs, but also directly prevents HIV infections. Counselling on the risk of HIV and on risk-reduction strategies like reducing the number

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of partners, also directly prevents STD as well as HIV infections. Health education is the least expensive aspect of STD case management and requires little resources compared with diagnosis and treatment. Information on the quality of STD health education can therefore help to improve programmes designed to cost-effectively reduce the spread of STD/HIV.

This paper reports on a study to assess the quality of health education during STD case management in Nairobi. Other aspects of STD case management like history taking, physical examination and treatment were assessed as well but are reported separately.[11] The study compared the performance of different types of healthcare providers and facilities. Providers included in the study are doctors, nurses, clinical officers, pharmacists and health staff with minimal formal training (nurse aids and pharmacy attendants). Facilities included in the study are private clinics, pharmacies, non-government organisations (NGO)/community-based clinics, mission clinics, and public clinics strengthened and non-strengthened for STD care. Strengthened clinics are clinics where providers have been trained in syndromic management and which are regularly supplied with STD drugs by the Kenyan government/donor agencies. They serve as STD referral clinics for other public facilities.

Quality, in this paper, is defined as the degree to which health education is complete and correct during STD patient observations, according to WHO criteria as well as according to Kenyan national guidelines (see section on outcome measures). The WHO criteria refer to condom promotion as well as contact treatment (or partner referral) and are described in the WHO protocol for the assessment of STD care.[12] The national criteria refer to the '4 Cs' described in the Kenyan syndromic management flowchart, which was developed and distributed among providers in 1996.[10]

Methods

Sampling

Five densely populated sub-locations in Nairobi were selected, covering a mixture of medium, low and very low socioeconomic status areas: Kibera, Buruburu, Korogocho, Kawagware and Mathare. These 5 areas are inhabited by about one-third of Nairobi's estimated 2.5 million inhabitants[13]. Within these areas, facilities were identified by walking through all the streets and listing those encountered. Questionnaires were administered to a staff member to determine type and dimension of the practice as well as eligibility, i.e., having seen 4 or more STD patients the previous week. Facilities from the city centre and from neighbouring areas which were frequently visited by people from the study areas, were also included in the study when meeting the criterion for eligibility. These facilities were identified in a parallel community study on STD-related healthcare seeking behaviour, which was part of the same research project. Additionally, of the Nairobi City Council (NCC) public clinics, all those that were strengthened for STD care were included

in the study13. Within each eligible facility all providers at work on one randomly chosen day were studied, after obtaining consent from the heads of the facilities.

Provider-patient observation

Providers were observed for a full working day as they managed patients, to assess their performance. Verbal consent was obtained form each patient to allow the observer to be present throughout the consultation. Interactions between provider and STD patients were recorded using a standard checklist, including aspects of STD health education.[12] Whether the STD patient paid a first time or a follow-up visit was also recorded.

Interview

After the observation session, providers were interviewed to assess their knowledge regarding STD health education, using a standard questionnaire.[12] The interview also covered demographic details, other characteristics like profession and training, and available supplies/materials for STD health education.

Simulated patient visits

This method assessed a provider's actual daily practice, as opposed to observations which assessed optimal performance since the provider was aware of being studied. One simulated patient visited each provider at an unannounced time. The providers were informed of the simulated patient's visit beforehand within a predestined time period of 2 months. The simulated patient presented with an STD complaint in accordance with a predefined standard scenario (milky discharge, no pain, and a recent history of unsafe sex). Immediately after the consultation, the simulated patient recorded all advice/health education given, using a standard checklist.

Data collection and analysis

After the research protocol was approved by the Medical Ethical Committee of the University of Nairobi/Kenyatta National Hospital, research assistants (male senior medical students and qualified female nurses) were trained in all 3 methods, and study instruments were pilot tested. During fieldwork, logistics were carefully organized to ensure that those who posed as simulated patients did not go back to the same facility for observations/ interviews. Problems arose on finding the same provider to be studied at different times, resulting in not all providers being studied by all the 3 methods. Data were checked for completeness on a daily basis and entered in Epi Info Version 6.02. After data cleaning SPSS was used to do cross tabulations and Chi-square calculations. Test statistics were adjusted to take into account the correlation between observations that results from the clustering of patients within providers. To this end we used the Generalised Estimated Equations (GEE) approach in logistic regression of Proc Genmod in SAS version 6.12 TS level 0060.

Outcome measures

Condom promotion According to the WHO protocol, proper condom promotion requires that advice is given on condom use for the prevention of STD/HIV infections. National guidelines additionally require that instructions on how to use condoms are given. Although national guidelines also require that condoms be given to an STD patient, this was not taken into account because most facilities had a condom dispenser/box, where patients could freely help themselves to take as many condoms as they needed.

Contact treatment According to the WHO protocol, providers should mention treatment of partner(s) to the patient or provide drugs for partner(s). National guidelines require the provider to really urge patient to refer partner(s) for treatment (instead of only mentioning it) or provide drugs for partner(s). When contact cards were given to a patient, this was considered as really urging patients to refer partner(s).

Prevention Indicator 7 (PI7) According to the WHO protocol, PI7 measures the proportion of patients correctly advised on condom use plus contact treatment. This was calculated using both the WHO and national criteria for each item.

Compliance The WHO does not have any guidelines on informing patients on compliance. National guidelines require that information be given on how to take the medication as well as the importance of taking the full course.

Counselling The WHO protocol does not have any guidelines on the counselling of patients. Since the national guidelines/flowchart does not define counselling any further than 'empathise and dialogue with patients; discuss the other 3 Cs', a study criterion was adopted from the Kenyan facilitator manual on sexually transmitted infections (STIs).[14] This is the manual used in training health workers in STI in Kenya. For 'counselling' to be correctly scored, a patient should have been counselled on his/her diagnosis, on how STDs are spread, as well as on the risk of HIV or methods of risk reduction other than condom use. Whenever the 'national guidelines/the 4 Cs' is referred to, the reader should keep in mind that counselling was defined according to the study criterion.

The 4 Cs According to national guidelines, overall health education during STD case management should include all 4 Cs: Condom promotion, Contact treatment, Compliance plus Counselling. The 4 Cs were calculated using the national criteria, as well as using the WHO criteria for PI7 (condom promotion and contact tracing).

Results

A total of 142 healthcare facilities were studied: 79 private clinics, 23 pharmacies, 14 public clinics strengthened for STD care (10 NCC clinics, 1 special STD treatment centre and 3 research clinics), 13 NGO/community-based clinics, 8 mission clinics, and 5 public clinics non-strengthened for STD care.

In these facilities, 192 providers were studied: 49% were nurses, 18% clinical officers, 15% doctors, 6% pharmacists and 12% others; overall about one third had followed an STD in-service course.[13] Of all providers, 138 were studied with all 3 methods, 27 were only observed/interviewed, and another 27 were only visited by a simulated patient. Of the 165 observed providers, 27 did not see any STD patient. In total, 441 STD patients were observed, with a mean of 2.7 per provider (range 0-19). Of these patients, 59% were

Table 8.1 Quality of health education during STD patient observations (n=441): proportion of STD patients managed correctly according to the World Health Organization (WHO) and national criteria

Aspects of STD health education	Proportion managed correctly %
1. Condom promotion	
a. Advised on condom use for prevention of STD/HIV	41
b. Instructed on how to use a condom	20
WHO criteria (a)	41
National criteria (a + b)	20
2. Contact treatment[1]	
a. Mentioned treatment of partner	80
b. Really urged to refer partner	73
c. Drugs given for partner treatment	6
WHO criteria (a or c)	80
National criteria (b or c)	74
PI7 (1 + 2)	
WHO criteria	38
National criteria	19
3. Compliance[1]	
a. Instructed on how to take drugs	97
b. Told the importance of completing all medication	85
National criteria (a + b)	83
4. Counselling	
a. Informed on the diagnosis	83
b. Explained how STDs are spread	63
c. Informed on HIV risks or risk reduction (other than condom use)	67
National (study) criteria[2] (a + b + c)	52
The four C's (1 + 2 + 3 + 4)	
(1 + 2) WHO criteria, (3 + 4) national criteria	28
(1 – 4) National criteria	17

[1] Contract treatment and compliance refer here to the health education given by the provider, not to the behaviour of the patient.

[2] Because the national criteria for counselling are rather open ('empathise and dialogue with your patient, discuss the other 3 C's'), we adapted the criteria fur the purpose of this study. Thus, figures more reflect the study criteria than the national criteria.

PI7 = Prevention Indicator 7

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female; 58% were between 20-29 years old; 61% were married; and 61% had complaints involving discharge without ulcers.

Quality of health education during STD patient observations

Table 8.1 shows the proportion of STD patients correctly managed for each outcome measure, for all providers/facilities together. Scores were high for contact tracing and compliance but low for condom promotion and counselling. Condom promotion had the poorest score, especially according to national criteria (advice on condom use plus condom instruction given), which was only scored 20%. About one-third of observed STD patients were provided with condoms (31%). Although contact treatment was scored high, only 18% of patients were provided with a partner referral slip/notification card. Counselling was scored rather low because only two-thirds of providers explained how STDs were spread, or informed about HIV risk or risk reduction. Combined scores based on WHO or national criteria were poor, mainly due to low scores on condom promotion.

When comparing providers who had attended an STD in-service course and those who had not, there was no difference in performance with regard to contact treatment (WHO criteria) and compliance (Table 8.2). Providers who had attended an STD in-service course performed about twice as good on condom promotion and counselling, as those who had

Table 8.2 Quality of health education during STD patient observations (n=441): proportion of STD patients managed correctly according to the World Health Organization (WHO) and national criteria, by whether or not a provider attended an in-service course on STDs

Aspects of STD health education	Attended STD in-service course (%) (n=203)	Not attended STD in-service course (%) (n=203)	Chi-squared p-values
1. Condom promotion			
WHO criteria	58	27	<0.001
National criteria	33	8	<0.001
2. Contact treatment[1]			
WHO criteria	82	79	0.38
National criteria	79	70	0.03
PI7 (1 + 2)			
WHO criteria	55	24	<0.001
National criteria	32	8	<0.001
3. Compliance[1]			
National criteria	85	81	0.24
4. Counselling			
National (study) criteria	64	42	<0.001
The four C's (1 + 2 + 3 + 4)			
(1 + 2) WHO criteria, (3 + 4) national criteria	45	14	<0.001
(1 – 4) National criteria	29	7	<0.001

[1] Contract treatment and compliance refer here to the health education given by the provider, not to the behaviour of the patient.

PI7 = Prevention Indicator 7

not (p< 0.001). This resulted in large differences between trained and untrained providers regarding PI7 and the 4 Cs.

With regard to profession of providers, significant differences (p< 0.01) were observed on all health education aspects, with pharmacists and 'others' (mainly low-skilled personnel like nurse aids and pharmacy attendants) scoring lowest (Table 8.3). When comparing doctors with nurses and clinical officers, doctors scored significantly lower with regard to national condom promotion criteria: only very few of them gave condom instructions. This resulted in significantly lower scores for doctors on PI7/the 4 Cs according to national criteria. Clinical officers scored significantly lower on contact treatment (WHO and national criteria), compliance and counselling. Nurses on average had a score between doctors and clinical officers.

When comparing different types of facilities, pharmacies scored lowest on most aspects of STD health education (Table 8.4). The other types of facilities generally performed equally well on contact treatment and compliance. For condom promotion, mission clinics scored extremely low, resulting in very low scores for PI7 and the 4 Cs, while for counselling pharmacies scored lowest. Public clinics strengthened for STD care and NGO/community-based clinics had the best scores. Except in public clinics strengthened for

Table 8.3 Quality of health education during STD patient observations (n=441): proportion of STD patients managed correctly according to the World Health Organization (WHO) and national criteria, by profession of provider

Aspects of STD health education	Doctor (%) (n=69)	Nurse (%) (n=228)	C.O. (%) (n=86)	Pharm. (%) (n=28)	Other (%) (n=29)	Chi-squared p-values
1. Condom promotion						
WHO criteria	45	48	33	21	21	0.002
National criteria	9	25	28	0	0	<0.001
2. Contact treatment[2]						
WHO criteria	84	88	73	45	66	<0.001
National criteria	83	83	66	28	55	<0.001
PI7 (1 + 2)						
WHO criteria	42	46	33	7	17	<0.001
National criteria	9	24	28	0	0	<0.001
3. Compliance[2]						
National criteria	93	91	74	55	48	<0.001
4. Counselling						
National (study) criteria	68	61	42	21	7	<0.001
The four C's (1 + 2 + 3 + 4)						
(1 + 2) WHO criteria, (3 + 4) national criteria	38	32	30	0	3	<0.001
(1 − 4) National criteria	9	21	27	0	0	<0.001

[1] 'Other' are nurse aids and pharmacy attendants.

[2] Contract treatment and compliance refer here to the health education given by the provider, not to the behaviour of the patient.

C.O. = clinical officer; Pharm. = pharmacist; PI7 = Prevention Indicator 7.

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STD care, performance on the 4 Cs was rather poor, with scores ranging from 37% in NGO/community-based clinics to as low as 3% in pharmacies.

Tables 8.2 to 8.4 show that most of the observed differences between trained and untrained providers, between different professions, and between different types of facilities, are highly significant. However, standard statistical techniques such as the Chi-squared test, assume that observations (in this case patients) are statistically independent. This assumption is not met in our data. Different patients seen by one provider have that provider in common, and this clustering within providers causes correlations between observations. However, when this effect is taken into account using the GEE approach mentioned in the methods section, the p-values in Tables 8.2 - 8.4 do not change critically. Significant variables remain significant ($p< 0.05$) with the exception of one variable in each table (contact treatment according to national criteria for Table 8.2, condom promotion according to WHO criteria for Table 8.3 and compliance for Table 8.4). These shifts in significance do not influence any of the conclusions of this paper.

Table 8.4 Quality of health education during STD patient observations (n=441): proportion of STD patients managed correctly according to the World Health Organization (WHO) and national criteria, by type of health care facility

Aspects of STD health education	Pharm. (%) (n=40)	Private clinics (%) (n=114)	NGO/ comm.-based clinics (%) (n=49)	Mission clinics (%) (n=103)	Public clinics streng. (%) (n=121)	Public clinics non streng. (%) (n=14)	Chi-squared p-values
1. Condom promotion							
WHO criteria	18	42	65	6	69	29	<0.001
National criteria	0	18	25	2	40	21	<0.001
2. Contact treatment[1]							
WHO criteria	48	83	92	80	84	93	<0.001
National criteria	33	74	88	74	81	93	<0.001
PI7 (1 + 2)							
WHO criteria	8	39	65	6	65	29	<0.001
National criteria	0	18	25	2	38	21	<0.001
3. Compliance[1]							
National criteria	50	79	86	91	88	86	<0.001
4. Counselling							
National (study) criteria	15	47	59	44	71	71	<0.001
The four C's (1 + 2 + 3 + 4)							
(1 + 2) WHO criteria, (3 + 4) national criteria	3	25	37	5	56	29	<0.001
(1 – 4) National criteria	0	16	25	2	34	21	<0.001

[1] Contract treatment and compliance refer here to the health education given by the provider, not to the behaviour of the patient.

Pharm. = pharmacies; NGO = nongovernmental organisation; comm. = community; streng. = strengthened; PI7 = Prevention Indicator 7.

Comparison of the 3 methods

Table 8.5 shows the quality of health education during STD case management, as measured by the 3 different methods: interviews, observations and simulated patient visits. Only the 114 providers who were studied with all 3 methods are included. In the table, counselling during the interview concerns 'inform about HIV risk or risk reduction', because the other 2 issues were not raised during the interview.

Scores on all aspects of STD health education were highest during interview, lower during observation and lowest during simulated patient visit (Table 8.5). This indicates that providers have a good knowledge on each aspect, but they do not fully translate this into actual practice. Of the 4 Cs, condom promotion is scored lowest already during the interviews, especially for national criteria (i.e., giving condom instruction). During simulated patient visits, the scores for condom promotion drop below 30%, while the scores for counselling and compliance drop to 35% and 51% respectively. Only 19% of simulated patients received health education on all the 4 Cs.

Table 8.5 Quality of STD health education during interviews, STD patient observations, and simulated patient visits, for the 114 providers who were studied by all 3 methods

Type of health education	Interviews (%) (n=114)	Observations (%) (average score per provider) (n=114 providers)	Simulated patient visits (%) (n=114)
1. Condom promotion			
WHO criteria	90	44	28
National criteria	65	19	11
2. Contact treatment[1]			
WHO criteria	97	80	62
National criteria	n.a.[2]	68	51
PI7 (1 + 2)			
WHO criteria	89	40	27
National criteria	65	18	10
3. Compliance[1]			
National criteria	99	78	51
4. Counselling			
National (study) criteria	97[3]	47	35
The four C's (1 + 2 + 3 + 4)			
(1 + 2) WHO criteria, (3 + 4) national criteria	87	25	19
(1 – 4) National criteria	64	15	9

[1] Contract treatment and compliance refer here to the health education given by the provider, not to the behaviour of the patient

[2] It is impossible to assess the difference between WHO and national criteria for 'contact treatment' during the interview, because providers would have to assess themselves whether they 'only mention the treatment of partners', or whether they 'really urge patients to have partners treated'.

[3] Counselling during the interview only covers health education on HIV risk or risk reduction (not diagnosis and spread).

WHO = World Health Organization; n.a. = not applicable; PI7 = Prevention Indicator 7.

Discussion

Since STD health education requires little resources except time, improving its quality can be a low-cost strategy in preventing the spread of STD/HIV infections in Kenya. In this study, quality of STD health education was found to be high with regard to contact treatment and compliance, however it was poor for counselling and condom promotion. The latter has the lowest score, resulting in the WHO indicator for STD case management PI7 (correct condom promotion plus contact treatment) to be poor (38%).

Since condom use is one of the most effective strategies in reducing the rate of transmission of STD/HIV,[15, 16] education about condom use and its role in STD/HIV prevention should form a major component in programmes to control STD/HIV. In this study, although the providers' level of knowledge on condom promotion seemed high (90%), it was often not translated into actual practice (28%). Of the observed STD patients, only 20% received instructions on how to use condoms and only 31% were provided with condoms (although it was not assessed how many took condoms themselves from condom dispensers/boxes). To increase PI7 in Nairobi, it will be necessary to improve condom promotion and instruction, especially in mission clinics which hardly ever raise the subject of condoms. If the taboo to talk about condoms in mission clinics can be broken, it could improve the prevention of STD/HIV transmission in Nairobi considerably.

Since contact treatment is one of the few effective ways in which asymptomatic STD cases can be managed, it is encouraging that scores on this aspect were high (80%), indicating high service quality. However, high rates of promotion of contact treatment do not guarantee that information given by the provider is utilised by the patient, especially not by women who often fear the reaction of their partners.[8] An important strategy to make it easier for patients to refer their partners, is the use of contact cards or partner referral slips. The patient can hand over these cards, which ask the partner to come to the clinic, if necessary without discussing STDs with their partner. In this light, it is alarming to see that in our study only 18% of observed STD patients and only 10% of simulated patients were given contact cards by the provider.

With regard to counselling, most patients were informed about the STD diagnosis (83%), but only about two-thirds were informed about how STDs were spread, and about HIV risk or risk reduction strategies. About half were informed about all 3 aspects. Perhaps providers were fearful of offending patients by intruding into private sexual matters, although most providers were not fearful talking about contact treatment. Lack of time due to the heavy workload may also contribute to the sub-optimal performance of providers. Another factor is that the national syndromic management flowchart does not describe what counselling topics to address, thereby leaving the providers to decide for themselves what information to provide.

The study findings indicate the need to improve health education during STD management, especially with regard to condom promotion and counselling. A first prerequisite in giving health education on STDs is the availability of the necessary materials. We found that several materials were not sufficiently available: 77% of the interviewed providers had a supply of condoms, 27% had a penile model (necessary to show how condoms are properly used), 36% had contact cards, 52% had leaflets or pamphlets for patients on STD/HIV/AIDS, and 66% had posters on STD/ HIV/AIDS. This lack of adequate materials could be a reason why providers did not always translate knowledge into practice. Moreover, only 61% of interviewed providers had the national syndromic management flowchart on STDs, which promotes the 4 Cs. We therefore feel that wide distribution of these materials, including the flowchart, to all healthcare facilities in Nairobi would be an important step in improving STD management. Before reprinting the flowchart it is advisable to restructure it so that counselling topics like diagnosis, ways in which STDs are spread, and HIV risks/risk reduction, are mentioned specifically.

Training of providers to increase knowledge and skills can significantly improve STD health education.[17, 18] The effect of training however abates over time,[18] indicating that it should be an ongoing process, with monitoring/feedback of the quality of care by supervisors. In Nairobi, studies among antenatal clinics which screen for syphilis showed that training and supervision of providers on contact treatment led to a significant increase in partner referral rates.[19, 20] The importance of training is confirmed in our study: providers who had attended an STD in-service course performed better than those who had not. Because pharmacies and mission clinics came out worst in the study, special efforts should be made to include these groups in training interventions. Furthermore, the curriculum used in the training of pharmacists should be changed, because issues on STD health education are not covered currently.

Additional interventions are needed which help providers to translate their knowledge and skills into practice. In Nakuru province in Kenya, the introduction of an STD management checklist (at which providers tick each aspect they have covered) led to a tremendous increase in the quality of STD health education.[2] Such a checklist can also assist in the surveillance of quality of STD care. It is therefore recommended that the introduction of a checklist be extended to other parts of the country, including Nairobi.

Another way to improve the quality of STD care is the development and social marketing of pre-packaged syndromic management kits for STDs. The kits contain drugs to treat one syndrome, condoms, a condom instruction leaflet, a contact treatment card, as well as a leaflet with general health education. Several pilot studies have shown the feasibility of the development of these kits, as well as their acceptability for health workers and patients.[21,22] In Uganda, a kit for male urethral discharge called 'Clear seven' was socially marketed in private clinics, pharmacies and retail drug shops. Evaluation showed that Clear seven users (n=422) versus controls (n=405) had significantly higher self-reported compliance (93% versus 87%) and condom use during treatment (36% versus 18%), while 22% of Clear

seven users reported using condoms for the first time.[23] These study findings suggest that pre-packaged syndromic management kits for STDs are a promising strategy in improving STD case management. Considering that in our study only 31% of observed patients received condoms and only 18% received contact cards, pre-packaged kits for STD management would greatly improve STD health education in Nairobi. This is especially true for pharmacies which performed worst on all health educational aspects in our study.

It is possible to compare the results of this study with findings from studies in other developing countries, which also used patient observations. The score of 38% for WHO PI7 in Nairobi can be compared with studies in Malawi, Ethiopia and India, which found PI7 scores of 29%, 17% and 12%, respectively.[24-26] The score for partner notification was 80% in Nairobi, as compared with 65%, 35%, 27% in the abovementioned studies, and 45% and 57% in Zambia and Jamaica.[27, 28] Condom promotion, which was found to be 41% in Nairobi, was scored lower in Malawi, Ethiopia, Zambia and India (between 17% and 40%) but was scored higher in Jamaica (59%).[24-28] In Nairobi 83% of STD patients were informed about their diagnosis versus 36% in Zambia; 63% were informed about how STDs were spread in Nairobi versus 34% in Zambia; and 67% in Nairobi were informed about the risk of HIV versus 10% in Zambia and 32% in Ethiopia.[25, 27]

These comparisons show that health education during STD case management in Nairobi is certainly not worse (and may be even better) than in most developing countries. Nevertheless, considering that only 27% of the simulated patients received proper education with regard to WHO indicator PI7 and only 19% with regard to all 4 Cs, the situation could be much improved in Nairobi. Hence we call for the implementation of interventions which have proven to be highly effective in other settings: wide distribution of health education materials, ongoing training and supervision of providers, the development of checklists during STD management, and the social marketing of pre-packaged syndromic management kits. These interventions will not only improve STD health education in Nairobi but also STD treatment, an aspect which is equally important in the management of STD patients.[11]

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Traditional healers and the management of sexually transmitted diseases in Nairobi, Kenya

Acknowledgements

Abstract

To describe the role of traditional healers in STD case management, in-depth interviews were held with 16 healers (7 witchdoctors, 5 herbalists and 4 spiritual healers) in 4 slum areas in Nairobi, Kenya. All healers believed that STDs are sexually transmitted and recognized the main symptoms. The STD-caseload varied largely, with a median of 1 patient per week. Witchdoctors and herbalists dispensed herbal medication for an average of 7 days, whereas spiritual healers prayed. Thirteen healers gave advice on sexual abstinence during treatment, 11 on contact treatment, 4 on faithfulness and 3 on condom use. All healers asked patients to return for review and 13 reported referring patients whose conditions persist to public or private health care facilities. Thus, traditional healers in Nairobi play a modest but significant role in STD management. Their contribution to STD health education could be strengthened, especially regarding the promotion of condoms and faithfulness.

Introduction

Traditional medicine plays an important role in most African societies. Many essential biomedical drugs are scarce and expensive and there is shortage of trained medical personnel, hospitals and equipment. In Uganda, for example, there is a traditional health practitioner for every 200-400 people, whereas the availability of trained medical personnel is 1 per 20,000 people.[1]

Besides being locally accessible, traditional health systems are culturally appropriate. Ethnomedical views are still predominant in many African countries, especially regarding STDs. The most common cause of STDs is believed to be the violation of sexual taboos related to birth, pregnancy, marriage and death, such as sex with an uncleansed widow or sex within the post-partum abstinence period.[2] Other causes are the violation of norms governing sexual behaviour (like adultery and promiscuity), sorcery or evil spirits, and contamination by 'dirt', insects or microscopic agents.[2-4] Because many of these causes require traditional rather than biomedical treatment, patients with STD often seek care from traditional rather than biomedical health care providers. Furthermore many STD-patients (and healers) have great faith in the efficacy of traditional medicine, which typically consists of decoctions from leaves and roots of various medicinal plants, administered as teas.[4-6] Other reasons for seeking traditional healing include the desire for privacy and confidentiality. This is especially important for STD patients, who are often regarded as shameful, reflecting 'loose morals', and are therefore stigmatised.[7, 8]

In Kenya, the role of traditional healing in STD management has not been studied before, although some studies have been performed on health seeking behaviour for STDs.[6, 9, 10] Because STDs are a major health problem in Kenya and a co-factor in HIV

transmission,[11-13] it is important to know the contribution of traditional healing in the fight against STDs. This study was conducted to describe the role of traditional healers in the control and prevention of STDs in Nairobi. It was part of a larger research project in which the effectiveness of STD case management by different types of health care providers was assessed.[14-15] The specific aim of this study was to describe aspects of traditional healing that are relevant for STD control, such as STD case load, the most commonly seen STD complaints, duration taken before consultation, type and duration of treatment, possible use of biomedical drugs, follow-up and referral patterns, health education, and condom promotion. The assessment of the effectiveness of traditional medicine for STDs was beyond the scope of this study.

Methods

The study was conducted in 4 densely populated low and very low-income areas in Nairobi, namely Kibera, Kawangware, Korogocho and Mathare, between March and June 1999. For the identification of traditional healers, information was used from 15 key informant interviews (with social workers, village elders, health staff and other community members) and 17 focus group discussions (with young and senior men and women of different socio-economic background) on STD health seeking behaviour. In addition, some traditional healers were identified in a visual enumeration of all health care facilities in the study areas, which was part of the larger research project. Some healers mentioned their colleagues. Of the identified healers, a sample were traced and asked to participate in the study. An anthropologist conducted interviews and tape-recorded the responses. The interview included semi-structured and open ended questions focusing on the following: training background, knowledge of STD transmission and symptoms, STD case load and commonly seen STD complaints, duration taken by patients before consultation, STD diagnosis and examination, healing practices and their duration, follow-up and referral, health education, and reasons why healers think STD patients consult them.

Results

In total, 26 healers in the study areas were identified by name and other details, through the focus group discussions, key informant interviews or by enumeration. A convenience sample of 17 healers were traced and asked to participate in the study, 1 of whom refused. In total, 16 traditional healers were interviewed: 7 witchdoctors (of whom 2 were female), 5 herbalists (4 female) and 4 spiritual healers (none female). After being introduced by a community member (for some healers) and after explaining the aim of the study, the healers were open in discussing healing practices as well as STDs. The interviews lasted on average 1.5 hours.

Training background and specialization

Witchdoctors and herbalists reported to have acquired their general healing skills informally, by observing and assisting their grandparents or other relatives in carrying out their practice, before establishing their own. Two had attended seminars organized for health-care providers and healers. Several said they had dreams pertaining to herbal medicine prior to engaging into the practice. Of the 4 spiritual healers, 1 had attended formal training in midwifery but dropped out before completion, the rest had neither formal nor informal training in health care.

All the traditional healers dealt in a wide range of health problems such as mental problems, epilepsy, paralysis, kidney failure, malaria, asthma, high blood pressure, measles, diarrhoea and STDs. They were specialized neither in STD treatment nor any other illness. Some of the healers said they saw conditions supposedly caused by supernatural forces such as offended spirits, gods, or demons, as well as conditions that have natural causes such as malaria, asthma, etc.

Knowledge of STD transmission and symptoms

All healers mentioned sexual intercourse as a mode of STD transmission. They had minimal knowledge of other transmission routes: vertical transmission and contaminated syringes/razors were each only mentioned by 3 healers. Misconceptions regarding transmission were prevalent: sharing clothes or towels was mentioned by 5 healers, sharing toilets/seats by 2, shaking hands by 2, kissing by 1, lack of bathing by 1, and contact with infected sweat or breath by 1. Only 1 healer mentioned witchcraft as a cause of STD transmission. Six healers did not have any misconceptions regarding STD transmission.

The STD symptoms that were correctly mentioned by the healers were lower abdominal pain, painful urination, discharge, genital swellings, genital ulcers and genital itching. Misconceptions regarding STD symptoms included backache, loss of appetite, red or yellow eyes, muscle pull, coughs, hair loss, headache, chest-ache, joint pain and fever. Seven healers did not have any misconception regarding STD symptoms.

STD caseload and commonly seen STD complaints

The patient caseload per healer varied largely. For herbalists and witchdoctors, the median number of all patients normally seen per week was 14 patients (mean 40). Of these, the median reported number of STD patients was 1 (mean 6). The daily caseload of STD patients ranged from 0 to 6 for the herbalists and witchdoctors. Spiritual healers reported to pray for large numbers of patients per day (they do not really treat patients but pray for them): this could be up to 100 or even 200 patients per day, of whom up to 20 could be STD patients.

All healers reported often seeing patients complaining of lower abdominal pain, and most of them regularly saw patients with painful urination or discharge. Patients with genital ulcers and swellings, itching or infertility were rare.

The duration taken by patients before consultation

The duration of symptoms reported by healers before STD patients consulted them, varied largely. Half of them said they were mostly consulted within a week to a month after onset of STD symptoms, while the other half said they were mostly consulted between a month and 1 or even several years (in some cases of syphilis and infertility). Normally patients with lower abdominal pain and painful urination came to see them promptly after onset of symptoms. Various healers reported that some patients first sought treatment elsewhere (from friends/relatives, chemists, drug shops, street vendors or clinics) and after failing to respond to the treatments they consulted traditional healers.

STD diagnosis and examination

In order to reach a diagnosis, most herbalists and some witchdoctors relied mainly on history taking, i.e., they asked the patient to describe the history and the nature of their complaints. Some witchdoctors employed a ritual of divination such as throwing cowry shells, seeds, or sticks, of which the random arrangement conveyed the cause of the illness. Others consulted spirits by singing and shaking gourds to reveal the supernatural cause of the illness. All spiritual healers diagnosed through prayers.

None of the healers reported to physically examine their STD patients, except for 2 herbalists who physically examined patients who presented with lower abdominal pain.

Healing practices and duration of treatment

None of the healers provided any biomedical drugs for STD patients. All herbalists and witchdoctors dispensed herbal medicine for STD patients, mostly concoctions to take orally, or cream to apply on the genital area, or herbs to bath in. Some cases required a combination of 2 or 3 of the treatments. Patients with genital ulcers and swellings were mostly given herbal cream. Most healers reported treatment duration to range from 3 to 7 days. Three healers prohibited patients from eating certain foods or drinking milk or alcohol during medication, as a way of facilitating the healing process.

Spiritual healers prayed for their STD patients and did not give medication, but 3 dispensed blessed water to all their clients. After prayers, they referred STD patients to formal health care facilities.

Follow-up and referral

Fifteen healers requested STD patients to return for follow-up, usually after a week; about two-thirds of STD patients complied with this request. Most of the healers reported a very

high cure rate (70-90%) after the first visit. Patients who failed to respond to the first treatment were either given the same or an alternative treatment, consisting of a more powerful concoction than the previous one, or referred to private or public clinics. In total 12 healers referred STD patients, after either the first or the second treatment. Patients were mostly referred to accessible and affordable public health care facilities such as Kenyatta National Hospital or the Special Treatment Clinic, which is the STD referral clinic in Nairobi, or sometimes to private facilities of the patient's choice.

Health education

Thirteen healers advised STD patients to abstain from sex while on treatment, and 11 asked STD patients to notify their partners to seek treatment (1 gave STD patients medicine to share with sexual partner(s)). Only 4 healers advised on faithfulness in sexual relationships (to stay with 1 partner, not to have multiple partners or be promiscuous), whereas only 2 promoted the use of condoms.

Reasons why healers think STD patients consult them

Reasons given by healers why STD patients prefer to consult them above other health care providers were: quality of care and low costs (each mentioned by 8 healers), recommendations by friends or relatives of the patients (6 healers), because they keep strict confidentiality (6 healers), and privacy (3 healers). On the other hand, when asked why other STD patients prefer to go elsewhere, quality of care was mostly mentioned (by 8 healers) followed by the idea that those patients can afford to pay a lot of money (3 healers).

Discussion

This paper discusses the role of traditional healers in STD management in 4 slum areas in Nairobi. In total, 26 traditional healers were identified by name and other details through key-informant interviews, focus group discussions, and visual enumeration, while another 23 were mentioned without specific names. It cannot be claimed that the identification of the healers operating in the study areas was exhaustive, but it is unlikely that the total number will be more than double the 50 identified in this study. The number of identified traditional healers can be compared with the more than 150 formal health care providers operating in the same study areas.[15] Thus, compared to most parts of Africa where traditional healers outnumber allopathic health-care providers by at least 10 to 1, the role of traditional healers in Nairobi slum areas appears to be modest.[16] This is enhanced by the low STD caseload of traditional healers of 1 per week (median). Since the mostly seen STD complaints were abdominal pain and painful urination (which are both atypical for STD), the actual caseload of STD-patients is even lower. This modest role of traditional healers in STD management is confirmed by a community study on health care seeking behaviour for STD, which was part of the same research project conducted in the same

study areas in Nairobi. In this health care seeking study it was found that only 9% of the 318 patients who had an STD-related complaint in the past year consulted a traditional healer for their last STD complaint.

The traditional healers in this study had substantial knowledge on STDs: all mentioned sex as the main mode of transmission for STDs, and the main STD symptoms. Nevertheless they also had considerable misconceptions about other routes of transmission, and several non-STD symptoms were seen as being sexually transmittable. Surprisingly, only 1 healer believed in supernatural causes of STDs, such as sorcery or the violation of social norms regarding sexual behaviour, that normally prevail among African healers as well as their STD patients.[3, 4] This can be due to the urban setting of this study, as well as numerous (health care) studies that have been conducted in the study areas.

The assessment of the effectiveness of traditional medicine for STDs was beyond the scope of this study. Healers claimed to have high cure rates for treating STDs, about 70-90%. Since the majority of their STD-patients return for follow-up visits, the healers' notion of cure rates could be empirically based. However, cure rates can partly be explained by spontaneous loss of STD symptoms unrelated to the traditional medicine. Furthermore it is also possible that traditional medicine alleviates STD symptoms temporarily without curing the underlying aetiology. Several studies that have been conducted to evaluate herbal medicine for the management of STDs showed some evidence of their effectiveness.[17, 18] Systematic clinical research in this field is not easy because of the many stakeholders and their conflicting agenda, especially with regard to HIV.[16]

The reported average duration of traditional treatment was 1 week, which might be prolonged for another week in case patients are not cured after the first treatment. Most healers reported to refer the STD patients who could not be cured (about 10 to 30%) to biomedical health care facilities. Thus, by going to traditional healers, the delay to seek care from biomedical health-care providers for these patients is mostly 1 to 2 weeks. This is relatively short compared to the 'patient delay' (the period between onset of symptoms and seeking health care), which was reported by the healers to vary from 1 week to 1 month to even 1 or several years. Therefore, even if traditional medicine is not effective in treating STDs, it is not very harmful in the sense of long delay of biomedical treatment. And since most healers advised their STD-patients not to have sex while they are on medication, few STDs will be transmitted while patients are on traditional medication (assuming that they follow the advice of their healers).

It is encouraging that many healers advise their STD patients to abstain from sex during treatment, and to inform their sexual partners to go for treatment. However, very few healers provided advice on condom use and faithfulness in relationships. This is a missed opportunity, because traditional healers have considerable authority in poor urban communities. They can reinterpret cultural categories and endow sexual behaviour with

new meaning.[19] The role of traditional healers in STD/HIV prevention can be strengthened if they are involved in training programmes. Such programmes have been established in various African countries such as South Africa, Uganda, Malawi and Mozambique, and they showed considerable effect.[2] In several of these countries, evaluations showed that trained healers reported advising their patients to use condoms and demonstrated methods of correct condom use.[3, 20, 21] In Zambia, 250 trained healers reported selling condoms to patients and community members through a social marketing programme.[2] In Uganda, where healers participated in a 15-month training programme of 3 training days per month, communities in which healers completed the training reported higher condom use as compared to control communities where healers were not trained (50% condom use against 17%).[2, 20] Thus, training of traditional healers in Nairobi on STD health education could improve their efforts to promote condoms to STD patients.

Of the 16 healers, 13 reported referring STD patients who could not be cured by them to biomedical health care facilities. This positive contribution to STD case management could even further be strengthened, as some training schemes for traditional healers have shown.[2] In Uganda for instance, the training of 210 traditional healers in 7 districts helped improve patient management by facilitating patient referral.[20] In Nairobi STD cases are most effectively managed in the Special Treatment Clinic (STC), which is the STD referral clinic, and in the Nairobi City Council (NCC) clinics that are especially equipped to treat STDs.[15] Traditional healers should therefore be encouraged to refer STD cases to these facilities.

In conclusion, traditional healers in Nairobi play a modest but significant role in STD prevention and control. Their contribution to STD health education can be further strengthened, by training them on how to promote condoms and faithfulness.

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10

General Discussion

In this thesis I have investigated important determinants of the spread of HIV and other STDs in Kenya, namely sexual risk behaviour, health seeking behaviour for STDs, and the quality of STD care. Our studies deepen the understanding of the dynamics of HIV spread and control in Kenya, and they aid in identifying effective prevention strategies to control the HIV epidemic. In this final chapter I will answer the three research questions posed in the introduction (section 10.1), describe the implications of our studies for HIV prevention and control in Kenya (section 10.2), and list the main conclusions and recommendations (section 10.3).

10.1 Answers to the three research questions

Research question 1: What is the sexual behaviour of current high-risk groups in HIV/STD transmission (sex workers, their clients and young people)? Are there differences between urban and rural areas?

Response: For female sex workers and their clients, our research showed that especially long-term, steady sex worker-client relationships involve unsafe sex. In Nyanza, the risk of STD/HIV transmission was highest in the rural areas, where clients had more other partners due to their mobile jobs (e.g. truck drivers, fishermen). For young adults, our study revealed high-risk sexual behaviour in both urban and rural areas, with an early sexual debut, large age difference between partners, high rates of partner change and concurrency, and low condom use with non-marital partners. Rural young women reported a riskier sexual behaviour than young women in town.

Overall, our study shows very high-risk sexual behaviour among core-groups like sex workers (chapter 2) and their clients (chapter 3), and also among young adults (chapter 4). The sexual practices are not only high-risk in an absolute sense, but also compared to sexual behaviour in other African countries. This may explain the relatively high HIV prevalence in the area. Another explanation may be the low circumcision rates of Luo men[1] (circumcision has a protective effect on HIV and STD transmission[2]).

Our findings demonstrate that high-risk sexual behaviour is not only present in Kisumu town, but also in the rural districts Siaya and Bondo. As compared to the urban site, the clients of sex workers in the rural sites reported more extramarital partners, a higher frequency of visiting sex workers, and lower condom use. Young women in the rural areas reported a younger age at sexual debut, less often being a virgin at marriage, more lifetime partners, and less consistent condom use with non-spousal partners, than their counterparts in town. Rural areas therefore seem to play a key role in HIV transmission. In chapter 4 we asked ourselves whether, in due time, HIV prevalence in rural areas could rise as high as in urban locations. By now it is clear that this indeed is possible. For example in Zimbabwe, antenatal clinic attendees have a higher HIV prevalence in some rural growth points (like Sadza, 34.2%) or border posts (like Chinotimba, 36.3%) than in

big cities like Harare (28.1% and 20.3%) or Mutare (22.6%).[3] Recently, HIV prevalence data among adults aged 15-49 years have become available from the Kenya 2003 Demographic and Health Survey (DHS). It shows that HIV prevalences for men in urban and rural Nyanza have become pretty close (14.6 and 10.9 respectively), whereas for women the difference is still profound (28.0 versus 16.7 respectively.[4] The fact that urban and rural HIV prevalences for men are closer than for women may be related to men frequently travelling between urban and rural sites. Nevertheless, given the high-risk behaviour of not only men but also women in rural areas, it is likely that HIV prevalence in rural Siaya/Bondo will become just as high as in urban Kisumu.

We show that in Nyanza province, clients of sex workers are as much a core group in HIV/STD transmission as the sex workers themselves (chapter 3). Not many studies have focused on the male clients,[5-14] and too often female sex workers have been blamed and held responsible for the HIV epidemic. This has helped to draw attention away from male sexual behaviour, and has put the onus of disease prevention on the sex workers.[15] But these women are economically depending on sex work, and mostly they have children to feed and dress. They often lack the power to negotiate condom use and can easily loose income by doing so. They may even risk sexual and physical violence when refusing unsafe sex. Therefore, interventions to reduce the HIV risk of commercial sex should be more directed towards male clients of female sex workers.

In sub-Saharan Africa it is not easy to define commercial sex. Exchange of material goods or money for sex is part of many relationships between men and women, especially in case women are forced to engage in such relationships for mere survival. Whereas in Western countries it is very clear when a sexual encounter is commercial, in Africa there is a continuum between commercial sex, transactional sex, and 'legitimate sex'.[16] Even if a sexual encounter is commercial, the woman may not identify herself as a sex worker because she only engages in sex work every now and then as an addition to her other means of income, or because she engages in sex work for a short duration.[15] It is therefore rather impossible to define who is a sex worker, or who is a client of sex workers. In our studies on sex workers and clients we let informants define themselves, and we included only those men and women who acknowledged engaging in commercial sex. The fact that men and women were approached in bars and other entertainment sites where commercial sex deals are initiated, facilitated the identification of men and women who identify with being clients and sex workers.

'Trust' was the main reason for not using condoms in our sex worker and client research (chapter 3). Other studies have also found that perceived trust is an important barrier to condom use.[17, 18] In a study among single people in bars and disco's in Australia, most women were convinced that not using condoms during casual sex would maximize the possibility that the casual encounter resulted in a longer-term relationship.[19] Similarly, sex workers in our study did not use condoms with some clients in the hope that they would become or remain a regular client. Condom availability is another important barrier to

condom use, in our study as well as that of others.[20] Other reported barriers to condom use include costs, embarrassment in purchasing condoms, difficulty in negotiating condom use with partners, interference with pleasure, alcohol use, religious objections, misconceptions that condoms are harmful or not effective against HIV, inconvenience (too many condoms required for many rounds of sex), condom breakage, and low perceived risk.[18, 21-23]

We have used some innovative methods in the sexual behaviour studies described in this thesis. For the female sex workers we have used the method of sexual or coital diary keeping (chapter 2). Although this method is not new, it is not often used in HIV-related research. It is considered to give more accurate results than retrospective questionnaires, because memory bias is minimised due to daily filling in of the diary. Experience has taught us that, when studying female sex workers, it is advisable to make a distinction in the diary between boyfriends, regular clients, and casual clients. For the study of clients of female sex workers we addressed men in entertainment places like bars, nightclubs and lodges (chapter 3). This method proved to be feasible, with a majority of men admitting to have ever visited a sex worker. We feel that this way of addressing clients for research as well as for prevention activities is highly recommendable in settings were sex work is mostly bar-based.

In the study of young adults, we tried to evaluate survey findings on sensitive sexual behaviours through follow-up by in-depth interviews, with the same interviewer and the same respondents (chapter 4). Findings revealed small differences between both methods, with in-depth interviews revealing slightly more risky behaviour. Although this suggests that survey answers are rather reliable, it is possible that both methods do not reflect real sexual behaviour practices.[24] In a recent paper by Plummer et al. on sexual behaviour among adolescents in rural Tanzania, only 58% of males and 29% of females with biological markers (STD/HIV or pregnancy) consistently reported ever having had sex during various interviews methods (face-to-face, assisted self-completion, and in-depth).[25] This shows that triangulation of methods (including biomedical measurements) is important in sexual behaviour research. Also, more confidential data collection methods need to be developed which improve the validity of self reports about sexual behaviour, especially for less developed settings. A good example is the informal confidential voting interview technique, developed in rural Zimbabwe by Gregson et al.[26] In this method, a respondent can write responses to sensitive sexual behaviour questions on small strips of paper (marked with the respondent number on the back), and then insert them into a small locked wooden 'voting box', of which only the field supervisors have the key. In rural Zimbabwe, this way of guaranteeing that answers were kept secret from the interviewers significantly increased the reported numbers of current sex partners, and sex partners in the last month and last year of men (OR 1.33, 1.71, and 1.35 respectively) and - in particular – of women (5.24, 2.92, and 1.97 respectively).[26]

Given the high-risk sexual behaviour as reported in our study, it seems unlikely that any change towards less risky sex practices had (yet) taken place in Nyanza, at least not until 1999 when we did the fieldwork to collect the data reported in this thesis. The only indication of sexual behaviour change that we found in our study, namely a possible shift from multiple one-off commercial sex contacts to long-term steady sex worker-client relationships, was a change towards *more* unsafe sex instead of *less* unsafe sex, due to a reduction of condom use in these relationships. The lack of risk reduction in Nyanza area is rather opposite to the trends in behaviour in neighbouring areas in Uganda, a country that worldwide succeeded the best in bringing down HIV prevalence. In a paper by Moore et al, data of pregnant women from sentinel surveillance sites in Uganda close to Lake Victoria were compared to neighbouring sites in Kenya, with regard to HIV prevalence over time between 1990 and 2000. All 5 sites in Uganda showed trends towards decreasing HIV prevalence, with three showing statistically significant declines, whereas all 5 sites in Kenya showed trends towards increasing HIV prevalence, with two (among which Kisumu) showing statistically significant increases.[27] The differences do not seem to result from clear differences in culture, circumcision levels, nor socio-economic factors. This seems to suggest that the different trends in HIV prevalence in Kenya and Uganda are – at least partly – a result of difference in HIV control policies between Kenya and Uganda.

> *Research question 2: What is the health care seeking behaviour of people with STD complaints?*
>
> *Response: A considerable proportion of people in Nairobi who experience STD-related complaints (20% of men, 35% of women) do not seek care, including self-care, mainly because symptoms are not severe or disappear, or because of lack of money. Of those who seek any care, men wait on average 2 weeks before seeking care and women 6 weeks. About two thirds of care-seekers go to the private sector, about 15% visit the informal sector, and 15% of men and 28% of women visit the government sector.*

Most studies on health care seeking behaviour of people with an STD are clinic-based.[28-30] They tend to ask patients about the health care facilities that they visited before coming to this clinic, and people who do not seek care at all are out of scope of these studies. Our study revealed that a substantial part of people with STD complaints never reach any type of health care provider, nor do they self-treat (chapter 5). These people walk around with an untreated STD for weeks or even months, and run the risk of developing serious complications and sequelae, which can lead to infertility and neonatal illnesses. They moreover jeopardise their partners with the risk of contracting the STD, or even HIV in case the patient is HIV positive. This is also true for the proportion of people with STD complaints who wait for over a month before seeking treatment (8% of men and 15% of women). It is therefore of the utmost importance to reach these people, mostly women,

with educational programmes to make them aware of the seriousness of STD complaints and the benefits of early recognition and prompt care seeking.

In our study we found that most care seekers visit private clinics, where quality of care is assumed to be high (chapter 5). Because costs of STD treatment were the highest in private clinics, apparently patients are willing to pay for this assumed higher quality. However, our study on quality of STD care (chapter 7 and research question 3) revealed that the proportion of STD patients receiving correct treatment was lowest in private clinics (namely 30%) as compared to other types of facilities (45% to 75%). Thus, people are paying the highest price for the lowest quality of care. During a recent conference presentation on quality of STD care in Nairobi pharmacies,[31] it was suggested that the recent worsening economic situation in Kenya may have caused people with an STD to seek less care in private clinics in recent years, and more care in pharmacies - which were visited by only 13% of men and 6% of women during our study in 1999. Because pharmacies perform the second worst with regard to STD treatment, such trends cannot be considered an improvement of health seeking behaviour.

Our findings revealed that care seeking is triggered in case people believe that their complaint is caused by sexual intercourse (chapter 5). STDs are apparently considered to be serious complaints that need medical attention. More than half of the women in our study did not know how they contracted the STD complaint (compared to 15% of men), whereas 57% of men related it to casual or commercial sex (compared to 5% of women). This explains largely the lower care seeking of women as compared to men. Therefore, educating women about symptom recognition, causes and treatment is of utmost importance in the control of STDs.

> *Research question 3: What is the quality of STD case management?*
>
> *Response: The majority of STD patients in private and public clinics in Nairobi underwent good history taking, but only half received a correct physical examination or correct treatment. Only a quarter was managed correctly on all three aspects. With regard to correct treatment, private clinics and pharmacies performed worst (30% and 38% respectively), and doctors did not perform better than nurses or clinical officers. Regarding health education, providers scored low on condom promotion (41%) and counselling (52%), but rather well on giving information on contact treatment (80%) and compliance (83%). Pharmacies scored lowest on all aspects of STD health education, except on condom promotion for which mission clinics performed worst (6%). Having followed an in-service course on STD management significantly improved performance.*

There are various ways to look at our findings. Providers in Nairobi were generally performing better in correctly managing STDs than providers in most other African,[32-39] Asian,[40, 41] or South American countries[42] (chapter 7). Still, the overall score for correct

STD case management (i.e., correct history taking plus correct examination plus correct treatment) was only 15% during simulated patient visits. To be fully cured and not immediately reinfected, correctly managed patients must comply with the prescribed medication, come back to receive alternative treatment if the problem persists, have their sexual partners well treated, and use condoms or abstain from sex during the course of their own and their partners treatment. Therefore, the proportion of patients eventually cured will be alarmingly low. This shows that correct STD case management as well as correct health education to STD patients is important, and improvements in both areas will result in a better STD control.

Our findings showed that the knowledge, performance and daily practice of most providers with regard correct STD treatment was insufficient (chapter 7). This was especially the case for providers working in private clinics and pharmacies, who respectively treated 30% and 38% of the observed STD patients correctly. These two types of facilities often gave 'incorrect syndromic management with only one of the possible etiologic agents treated correctly'. This meant that they either 'diagnosed' the etiologic agent causing the complaints of a patient purely on the basis of signs and symptoms without taking samples and performing diagnostic test (i.e., without performing correct etiologic treatment), or that they tried to give syndromic management but had at least one of the drugs/dosages incorrect. In the patients where only one of two possible etiologic agents were treated correctly (41% of observed patients in private clinics and 55% in pharmacies) it may roughly be estimated that the prescribed drugs cured about half of these patients. This brings the total proportion of cured patients to about 50% for private clinics (30% + 20,5%), and about 65% for pharmacies (38% + 27,5%).

Our findings show that there is a need to train health care providers in private clinics and pharmacies in STD case management and STD health education. Specific attention should be given to the syndromic management of STDs, because our study shows that treatment was less correct when based on syndromic management than when based on etiologic management (47% versus 68%, respectively). Other topics that deserve special attention are condom promotion and counselling. That training has the potential to improve performance is illustrated by the fact that providers who followed an in-service course on STDs performed better on treatment, condom promotion and counselling than untrained providers (chapters 7 and 8). Experience has shown that training should be an ongoing process, with monitoring and feedback of the quality of care by supervisors.[40, 43]

Knowledge of providers regarding correct history taking and examination was good, but during daily practice (as assessed by simulated patients) these aspects were performed less satisfactory (chapter 7). The same is true for all aspects of health education (chapter 8). As is often observed, also here knowledge is not always translated into daily practice.[44] This may be caused by many factors, such as time pressure during consultations due to high caseload, or lack of equipment and materials (48% of providers had a speculum, 61% had the STD management flowchart, 79% had a supply of condoms or a condom dispenser,

27% had a penile model to show correct condom use, 36% had contact cards, and 52% had leaflets for patients on STD/HIV/AIDS). Distribution of these materials to all health care facilities in Nairobi would be in important step in improving the quality of STD care. Because knowledge on most aspects is rather good (except regarding treatment), training alone may not be enough to improve STD control. Additional methods should be applied to improve case management, such as the implementation of a simple STD management checklist on which providers have to tick all aspects to be covered during consultation. This led to a tremendous increase in the quality of STD health education in Nakuru province in Kenya.[45] It may also be necessary to appoint more staff, so that the caseload per provider is lowered and more time is available per patient. Another option is the introduction of pre-packaged STD kits that contain – besides drugs – condoms, a condom instruction leaflet, a contact treatment card, and a leaflet with general health education on STDs and HIV. A study in Uganda on the introduction of these kits to private clinics showed that cure rates, treatment compliance and condom use during treatment were significantly higher among kit-users than controls.[46]

Our study revealed that availability of drugs also could have been a factor in the sub-optimal quality of STD treatment in Nairobi. During the interviews, 63% of providers had all drugs available for the standard treatment of urethral discharge and cervicitis (norfloxacin and doxycycline), 59% for vaginitis (nystatin and metronidazole), 63% for lower abdominal pain in women (norfloxacin + doxycycline + metronidazole), and 71% for genital ulcer disease (erythromycin and benzathine penicillin). Pharmacies and public clinics strengthened for STD care most often had all drugs available (67% and 63%, respectively), private clinics the least (29%). It may therefore be crucial for all types of health care facilities to notice and replenish drug shortages in time. Because local governments in most countries in sub-Saharan Africa cannot bear the costs for drugs by themselves alone, external donors such as the World Bank, the EU, and other multi- and bilateral agencies should support such expenditures.[47]

The syndromic management of STDs has been introduced in Kenya beginning of the 1990s. The approach is especially suited to settings where diagnostic facilities are lacking. Another advantage of syndromic management is that it leads to immediate treatment, because patients do not need to wait or come back for test results. The approach has generally proven to be cost-effective,[48] and to have had an impact on the STD epidemic.[49] In Nairobi, falling rates in STDs between 1992 and 1999 can largely be contributed to the introduction of syndromic management.[47, 50] However, the syndromic approach to STD treatment has also been criticised, mainly because the specificity is quite low for women with vaginal discharge, resulting a substantial over-treatment.[51] The development of rapid diagnostics tests that are affordable and easy to use (i.e., without laboratory facilities or expertise) could mean an important breakthrough for STD control in developing countries, at least for managing women with vaginal discharge. The development of such

tests is considered to be an absolute priority in STD research by STD control programme managers and STD specialists.[49]

In our studies we used three methods to assess the quality of STD care: interviews with providers, observation of case management of STD patients, and simulated patient visits (chapter 7). We know of only one other study, conducted and published later than ours, which also used these three methods to assess quality of STD care.[52] The conclusion of this paper was similar to ours, namely that interviews with providers and observations of provider-patient interactions may produce highly unreliable findings. This could lead to a severe underestimation of intervention needs. It is therefore important that simulated patient visits will be more often used to assess the quality of STD care. This is especially important in the monitoring and evaluation of a training intervention. Providers who have just been trained in STD care will be very aware of what they are supposed to do, ask and tell. When a researcher interviews them about these things or observes them during consultations, they will do their best to show what they have learned. However, this may be completely different from what they are doing when they are not aware that a researcher is observing them, as is the case in the simulated patient method.

We also studied STD care in the informal sector in Nairobi. We saw that traditional healers play a modest role in STD management, because they are relatively few and their average caseload is only 1 patient per week (chapter 9). This modest role is confirmed in the study on health care seeking behaviour, in which only 9% of patients with STD complaints sought care from traditional healers (chapter 5). Nevertheless, because of their authority in poor communities, we feel that traditional healers have a significant role to play in educating STD patients on condom use and contact treatment, and counsel them on HIV risk and faithfulness. Training programmes for traditional healers in various sub-Saharan African countries have shown to be effective in making healers more often promote and distribute condoms and demonstrate correct condom use.[53-55] We also studied the quality of STD care among street drug peddlers (n=38) and informal drug shops (n=37) in the informal sector in Nairobi, using male simulated patients. None of these informal providers gave the full correct treatment, but about a third of providers treated correctly for 1 of the 2 etiologic agents causing the simulated complaint (urethral discharge). With regard to health education, about 1 in 10 providers promoted condoms, and about 1 in 6 informed the simulated patients about the importance of having their partner treated. Overall, the quality of STD care among these informal providers was poor. Luckily, only a very small proportion of people in Nairobi report to visit drug shops or street drug vendors for their STD complaints (about 2%, see chapter 5). The found quality of STD care in Nairobi drugs shops was lower than in Ugandan drug shops.[56]

10.2 Implications for HIV prevention and control in Kenya

The findings of the studies described in this thesis have various implications for HIV prevention and control in Kenya. Because considerable unprotected commercial sex is ongoing in both urban and rural areas of Nyanza province, interventions addressing females sex workers and their clients should be initiated. As compared to Nairobi, where sex worker interventions are ongoing for over a decade, virtually nothing has been initiated so far in Nyanza.[47]

With regard to commercial sex, interventions should involve clients of female sex workers, because they are a core group in STD/HIV transmission, and they have the power to decide on condom use. Our study showed that bars and other entertainment places might be the best sites to reach clients (chapter 3). In fact about over three quarters of men addressed in these places reported visiting sex workers, as compared to for example 16% of men addressed in the informal sector in a study in rural Kenya, or 0.4% of men addressed in a household survey in Kisumu.[57] Therefore, interventions targeting clients of female sex workers in Kenya should take place in bars, nightclubs and lodges. The PLACE method as developed by Weir et al.,[58] of estimating local trends in sexual behaviour among individuals at social venues in areas at increased risk of HIV transmission, could be helpful in identifying the bars where most or most risky commercial sex activities take place. Because a lot of men who work in these places engage in commercial sex themselves, they are a good group to become involved in peer education programmes (chapter 3). They could not only distribute free condoms and prevention information to their customers, but also become aware of their own risk behaviour. Because clients of sex workers often have mobile jobs, peer-education programmes directed at clients of sex workers should be expanded to (bars located in) truck stops, minibus stops, and fishing beaches, especially during the peak fishing season.

HIV prevention programmes for sex workers and their clients should promote condom use in regular partnerships as much as in commercial partnerships. This issue constitutes a major challenge for prevention programmes targeting commercial sex all over the world. There is an urgent need to develop specialized educational materials and intervention strategies that address female sex workers, their regular partners and their regular clients. All should be made aware of their own risks and should be convinced to take the responsibility to use a condom, instead of relying on the faithfulness of their partner. Because condoms are widely associated with mistrust and unfaithfulness, IEC activities should promote condoms as a token of love, because they protect a partner. Apparently, the condom social marketing campaigns of the non-profit organisation Population Services International (PSI), which has developed and aggressively marketed a condom brand named 'Trust' in Kenya since 1993, has not had a large effect on men in Nyanza. Besides making the association with 'trust', condoms need to be eroticised and made more cool and sexy.[23] Recently, South Africa brought extra large condoms on the market, in

response to complaints about condoms being too small for 'well-endowed' South African men. This could help condoms become cool, because men will buy them to boost their ego.[59] In Mozambique, condoms developed in a social marketing programme were named *JeitO*, a Portuguese word that means style, flair and ability. The brand name's double meaning was exploited in advertising, which promoted the condom both as an STD/AIDS prevention method and a positive lifestyle choice.[60]

A first step in improving condom acceptance is to make sure that everybody who wants to use a condom can easily obtain one. Our study revealed that condoms are still not widely available in Nyanza, especially in the rural areas. Condom availability will be most effective in the places where sexual encounters are arranged. Therefore, bars, nightclubs, discos, hotels, and lodges should be provided with a sufficient supply of free condoms at all times. Providing condoms in the rooms of lodges where sex workers take their clients to spend the night may even be more effective.[61]

Because much sexual risk behaviour takes place in rural areas, HIV interventions for sex workers, their clients and partners, as well as for the general population should be expanded to these rural districts. Young adolescents should be addressed in their early teens, to reach them before they become sexually active. There are various examples of effective HIV prevention programmes for youth. In South Africa, a national HIV prevention programme for youth called LoveLife has been developed which combines a sustained multi-media awareness and education campaign with youth-friendly sexual health and outreach services. Four years after its launch, adolescents who had participated in at least one LoveLife programme were less likely to be infected with HIV than those who had not participated (AOR 0.60, 95% CI 0.40-0.89 for boys and AOR 0.61, 95% CI 0.43-0.85 for girls).[62] In a school health education programme in 95 primary schools in Uganda, the percentage of virgin students increased dramatically two years after initiation of the intervention, and students who were already sexually active reported a decrease in multiple sexual partners.[63] Thus, interventions for youth can be effective in preventing HIV, and they should be strengthened in both rural and urban areas.

Our findings regarding health seeking behaviour for STD (chapter 5) call for educational campaigns about early recognition of STDs and the benefits of prompt care seeking. Such campaigns should be specifically targeted at women, because they more often than men do not seek care at all, or wait very long before seeking care. Moreover, long-term consequences of neglected STDs can be more serious for women (infertility, adverse pregnancy outcomes) than for men. Because young people are less likely to seek care, interventions to improve health seeking for STDs should be incorporated in sex and HIV/AIDS education lessons in school curricula. In Nigeria, an intervention trial in secondary schools aiming at improving health seeking behaviour significantly increased treatment by private physicians (from 18% to 41%, OR 2.1) and significantly reduced self-treatment and treatment by medicine dealers/untrained pharmacists (from 36% to 25%, OR 0.87 and from 15% to 4%, OR 0.44, respectively).[64] Also, treatment facilities should

become more youth-friendly, e.g., by training providers to be non-judgmental, and having special opening hours for adolescents. In order to convince community members to seek care in the public sector, the quality and affordability of STD care in public health facilities should be promoted in educational campaigns.

The efficacy of the treatment provided is only one aspect of health service quality. Attracting more clients to the public sector for STD treatment will require significant improvements in all aspects of health service quality. Inconvenient hours of operation, long waiting times, and concerns about confidentiality and stigmatisation may all mitigate against seeking care in public clinics and favour seeking care in pharmacies and private clinics.[65] In our studies, only 5% of simulated patients had a feeling the provider despised or condemned them. Privacy seemed to be a bigger problem, with 15% of simulated patients indicating a lack of privacy. Convincing people to seek care in public clinics will require an improvement in all the above-named aspects.

Our studies showed that there is a need to improve the quality of STD care in private clinics and pharmacies in Nairobi (chapters 7 and 8). The private sector is a major provider of STD care and is key to national efforts to achieve better STD control, thereby preventing the spread of HIV. Although a complex task, strategies need to be found to improve the quality of care provided within the private sector. There is ample evidence that training of pharmacy workers can lead to significant improvements of the quality of STD care in developing countries.[40, 66, 67] For private physicians there are less examples.[67] The importance of training is confirmed in our study, because providers who have had followed an in-service course for STD management scored better on treatment and health education aspects than providers who had not. Several studies have shown that training should be an ongoing process with interactive workshops, follow-up evaluation, and refresher courses.[40, 66] Furthermore, regular supportive supervision and a reliable supply of drugs are crucial.[65]

Pre-packaged STD syndrome kits might be another key to successfully improve STD care in private clinics and pharmacies. The introduction of pre-packaged STD syndromic treatment kits was very successful in improving the quality of STD care in Uganda and South Africa, with correct treatment improving from 36% to 88% in South-Africa and cure rates improving from 47% to 84% in Uganda.[46, 68, 69] The pre-packaged kits were less successful in Cameroon, where users were satisfied with the kits but where only 27% of trained providers prescribed them.[70] The key differences in the success rates were the following: in Cameroon the price of the kits was very high (US$17), as compared to Uganda and South-Africa (US$1.50); in Cameroon the kits were only introduced in primary health care facilities as opposed to South-Africa, where they were also introduced in private clinics, and to Uganda, where they were sold over the counter at private pharmacies and drug shops; and in Cameroon providers were rather unsympathetic to syndromic management and there was a lack of support from public health policy makers, unlike the situation in Uganda and South Africa.[46, 68, 69] Thus, when the price is not too

high and providers and policy makers have positive attitudes, the impact on STD control may be tremendous. A possible disadvantage of these kits is that it is difficult to identify drugs for vaginal discharge that are effective, affordable, and safe for pregnant and breastfeeding women.[46] For men with urethral discharge and for men and women with genital ulcer disease, effective and safe drugs are easily available for an affordable price.

10.3 Conclusions and recommendations

Conclusions

- Clients of sex workers are a core group in HIV transmission in Nyanza province. Long-term sex worker-client relationships are very important for the transmission of HIV.
- Sexual behaviour is high-risk especially in the *rural* areas of Nyanza.
- Half of the women in Nairobi who have STD complaints do not seek any care at all or wait very long before seeking care.
- The majority of STD patients in Nairobi visit the private sector, in spite of its rather low quality of care and its high costs.
- Providers in Nairobi insufficiently educate their STD patients on condom use and on the risk to contract HIV.
- Following an in-service course on STD management significantly improves the quality of STD treatment and STD health education.

Recommendations for control measures

- HIV interventions regarding commercial sex should target clients of sex workers, and they should be implemented in bars, nightclubs and lodges.
- HIV prevention programmes should promote condom use in regular sex worker-client relationships.
- Community interventions should educate women about early recognition of STDs and the benefits of prompt care seeking.
- Interventions should be initiated to improve the quality of STD care in private clinics and pharmacies in Nairobi, for example by introducing pre-packaged STD syndromic treatment kits.

Recommended areas for future (intervention) research

- Strategies to target clients of female sex workers and to promote condoms in long-term sex worker-client relationships.
- Ways to collect reliable data on sexual behaviour, especially for young people. Sexual behaviour studies should also collect biological data, to be able to compare self-reports with biological markers.
- Effective interventions to improve the quality of STD care in the private sector in developing countries.

Sexual behaviour and quality of STD care remain important fields of research, not only from a scientific point of view, but also from an applied public health point of view. I hope that our studies have somehow contributed not only to science in general, but also to an improvement of public health of the people in Kenya, who have been so willing to participate in our studies.

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Summary
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Summary

This thesis investigates important determinants in the heterosexual spread of HIV in Kenya, namely sexual behaviour, health care seeking behaviour for sexually transmitted diseases (STDs), and the quality of STD care. The studies deepen the understanding of the spread of HIV and assist in identifying effective prevention strategies to control the HIV epidemic.

Chapter 1 introduces the AIDS epidemic, interventions to prevent HIV infection, and the research questions addressed in this thesis. Sub-Saharan Africa is the region that is hardest hit by HIV/AIDS: of the 4.9 million people who became globally infected in 2004, an estimated 3.1 million people are living in this subcontinent. The AIDS epidemic has a devastating impact on the health and lives of people in sub-Saharan Africa, including Kenya. Life expectancy has dropped by decades in the worst-affected countries, millions of children have lost one or both parents to AIDS, and children drop out of school because of lack of money or to take care for infected family members. On a societal level, economic growth has been slowed down, poverty has been deepened, and the health care system has been erased. Although antiretroviral therapy (ART) is slowly becoming available in sub-Saharan Africa, prevention of HIV infection remains the most important mode to curb the spread of the HIV epidemic. The main method to prevent people from getting infected is to convince them to change their sexual behaviour, i.e., to have less (risky) partners or to use condoms. Another important way to prevent HIV infection is to improve health care seeking behaviour for STDs and quality of care of STD, because STDs facilitate the transmission of the HIV virus.

Related to these methods of HIV prevention, the following research questions are addressed in this thesis: 1) What is the sexual behaviour of current high-risk groups in HIV/STD transmission (sex workers, their clients and young people), and are there differences between urban and rural areas; 2) What is the health care seeking behaviour of people with STD complaints; and 3) What is the quality of STD case management?

In **Chapter 2** we investigated the sexual behaviour of female sex workers in urban and rural areas of Nyanza province, the province in Kenya that has the highest HIV prevalence. Interventions for sex workers mostly focus on urban areas and stress the importance of condom use in commercial sex contacts. We were therefore interested in comparing the sexual behaviour of female sex workers in urban and rural areas, and in comparing condom use with clients and with regular partners. After a face-to-face interview, 63 sex workers kept a sexual diary for 14 days. In the diary they indicated on a daily basis each partner they had had sex with, the type of partnership (regular partner or client), the type of sex acts (vaginal, oral, and/or anal), whether or not a condom was used

in each sex act, and the price that was paid. Analysis of the interviews and diaries showed that most sex workers were divorced and that they had one or two regular partners who were mostly married to someone else. Sex workers in town had more clients in the past 14 days than women in the rural districts. Both had equal sex contacts with regular partners. Condom use with clients was fairly high (about 75%), but with regular partners a condom was used in less than 40% of sex acts. For both urban and rural areas, the mean number of sex acts in which no condom was used was higher for regular partners (3.2 and 2.8 respectively) than for clients (1.9 and 1.0 respectively). Thus, sex workers in urban and rural areas of Nyanza province practice more often unsafe sex with regular partners than with clients. Because regular partners themselves mostly have multiple concurrent short- and long-term partnerships, as is described in chapter 3, they are as much (or even more) high-risk partners than the casual clients of the sex workers. Interventions for sex workers should therefore also focus on condom use in regular partnerships.

Chapter 3 focuses on the clients of the female sex workers in Nyanza province. Because sex work in Nyanza is mostly bar-based, we asked men in bars, nightclubs, and lodges about their sex worker visiting. We held an informal conversation with 64 clients, to assess their sociodemographic background and their sexual risk behaviour. The majority of clients were between 25 and 36 years old, married, and had extramarital partners in addition to sex workers. Most clients had visited several (3–5) different sex workers in the previous year, of whom at least 2 were in long-term, steady sex worker-client relationships. Clients visited sex workers on average once or twice a week. Most clients were not consistently using condoms with sex workers. The main reason given was that they 'trusted' their steady sex workers. The meaning of the concept *trust* seemed to vary greatly. Only a minority believed that they were the only client, and maintaining a sex worker financially was sometimes seen as a guarantee for faithfulness. For others, trusting their sex worker meant believing she did not have an STD, knowing each other for a while, or believing they are the only client with whom she does not use condoms. Thus, commercial sex in Nyanza frequently involves multiple steady relationships with low condom use, instead of rapidly changing one-time contacts with high condom use. Interventions should target clients in bars, nightclubs, and lodges and should focus on convincing them to use condoms, with casual as well as steady sex workers.

We also studied the sexual behaviour of young adults aged 15-29 years in Nyanza (**Chapter 4**). HIV interventions in sub-Saharan Africa have often been focused on urban areas, where sexual behaviour is supposed to be more risky than in rural areas. We therefore compared rural and urban areas regarding sexual risk behaviour among young adults. In Kisumu town and the rural districts Siaya and Bondo, households were visited and 584 young adults were interviewed with a structured questionnaire. The results revealed that for women, sexual behaviour was more risky in rural than in urban areas, also after adjusting for sociodemographic differences. Rural women reported less frequently being a virgin at marriage, a higher number of lifetime partners, and less consistent condom use with non-spousal partners. For men, sexual risk behaviour was equally high in

urban and rural areas. We therefore conclude that the potential for further HIV spread in rural Nyanza is large. HIV/STD interventions should be expanded from urban to rural areas in Nyanza. In particular, the low levels of condom use in rural areas should be addressed by improving condom acceptance as well as supply.

Chapter 5 describes the health care seeking behaviour of people with STD complaints. Most studies on health care seeking behaviour for STDs are clinic-based, i.e., they ask STD patients in a clinic to which health care providers they went before coming to the clinic. These studies miss the part of the population that never visits a clinic or does not seek care at all. We therefore set up a population-based study to investigate health seeking behaviour for STDs in Nairobi. Of the 1929 household members that were interviewed, 307 (16%) experienced one or more STD-related complaints in the past 12 months. Of these, 20% of men versus 35% of women did not seek care at all, mainly because symptoms were not considered severe, symptoms had disappeared, or as a result of lack of money. These neglected STDs can result in serious complications and sequelae, which can lead to long-term health problems such as infertility and neonatal illnesses through congenital or peripartum infection. Of the people who sought care, women waited longer than men before seeking care (41 vs. 16 days). Most men and women went to the private sector (72% and 57%, respectively). This is unfortunate, because private clinics give the least adequate STD care of all types of formal health care facilities in Nairobi (including pharmacies), whereas they charge the highest fees (chapter 7). Relatively more women than men visited the government sector (28% vs. 15%). These public clinics are relatively cheap and perform best with regard to STD treatment and STD health education (chapter 7). The informal sector was not often visited (by 13% of men and 16% of women). Because women were mostly monogamous, they did not relate their complaints to sexual intercourse, which hampered prompt care seeking. Therefore, women should be convinced to seek care promptly, e.g., through health education in communities. Furthermore, people should be encouraged to seek care at government clinics by stressing their high quality of care as well as their affordability.

Chapter 6 explains the design of our studies to assess the quality of STD care in Nairobi (described in chapters 7 and 8). All enumerated formal sector facilities in 5 selected sublocations of Nairobi were studied. Neighbouring and city centre facilities frequented by people of the selected areas (as identified in the health care seeking study of chapter 5) were also included, as well as all Nairobi public clinics especially equipped ('strengthened') for STD management. Inclusion criterion was having seen at least 4 STD patients in the previous week. The following 6 types of facilities participated in the studies: public clinics equipped for STD care, unequipped public clinics, private clinics, pharmacies, mission clinics, and nongovernmental organisation (NGO) or community-based clinics. Of participating facilities, all providers who were present on a random day were studied using 3 methods: interviews, observations of provider-patient interactions, and simulated patient visits. All together 192 providers were studied in 142 facilities and observed while managing 441 STD patients.

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The results regarding the quality of history taking, examination and treatment are described in **Chapter 7**. Treatment in Nairobi was mostly based on syndromic management, meaning that drugs are given for all possible causative agents without performing microscopic test to assess which agent exactly causes the complaint. For the observations, correct history taking ranged from 60% to 92% among the various types of facilities, correct examination from 31% to 66%, and correct treatment from 30% to 75%. The percentage of correctness for all three aspects - World Health Organization (WHO) Prevention Indicator (PI) 6 - varied between 14% and 48%. Public clinics equipped for STD care performed best in all aspects, whereas treatment was poorest in pharmacies and private clinics (treating respectively 38% and 30% of patients correctly). For history taking, examination, and PI6, interview scores generally were higher than the observation scores, whereas the simulated patient scores were the lowest. Thus, the knowledge of providers - as measured during the interviews - was not translated into daily practice - as measured during the simulated patient visits. For treatment, pharmacies and private clinics scored below 40% even during the interview, which indicates that knowledge of syndromic treatment is highly insufficient in these facilities. Overall, providers who were trained in STD management performed better than those without training, and doctors did not perform any better than nurses or clinical officers with regard to treatment. In conclusion, quality of STD case management in Nairobi was unsatisfactory except in public STD-equipped clinics. This indicates the need for improvement by interventions such as further training in syndromic management (especially in pharmacies and private clinics), improved supervision, and the introduction of pre-packaged syndromic management kits.

Chapter 8 gives the results of the Nairobi quality of care study with regard to various aspects of health education during STD case management. For observations, scores were high for education on contact treatment (74%-80%) and compliance (83%), but unsatisfactory for counselling (52%) and condom promotion (20%-41%). The score for the WHO indicator for STD case management PI7 (condom promotion plus contact treatment) was poor (38%). Public clinics strengthened for STD care generally performed best, whereas pharmacies and mission clinics performed worst. Comparison of the three methods indicated that also for health education aspects, knowledge was not fully translated into daily practice. Providers who had attended an STD in-service course performed about twice as good on condom promotion and counselling, as those who had not. Interventions to improve the presently unsatisfactory quality of STD health education would be wide distribution of health education materials, ongoing training and supervision of providers, implementation of STD management checklists, and the introduction of pre-packaged syndromic management kits.

In **Chapter 9**, the role of traditional healers in STD case management is explored. In-depth interviews were held with 16 healers (7 witchdoctors, 5 herbalists and 4 spiritual healers) in 4 slum areas in Nairobi. All healers believed that STDs are sexually transmitted and recognized the main symptoms. The STD-caseload varied largely, with a median of 1 patient per week. Witchdoctors and herbalists dispensed herbal medication for an average

of 7 days, whereas spiritual healers prayed. Thirteen healers gave advice on sexual abstinence during treatment, 11 on contact treatment, 4 on faithfulness and 3 on condom use. All healers asked patients to return for review and 13 reported referring patients whose conditions persisted to public or private health care facilities. Thus, traditional healers in Nairobi play a modest but significant role in STD management. Their contribution to STD health education could be strengthened, especially regarding the promotion of condoms and faithfulness.

Chapter 10 reviews the research questions and the results of the study in the context of past and recent literature, and describes the implication of our studies for HIV prevention and control in Kenya. The conclusions and recommendations that follow from the research for this thesis are formulated in this chapter and repeated below.

Conclusions

- Clients of sex workers are a core group in HIV transmission in Nyanza province. Long-term sex worker-client relationships are very important for the transmission of HIV.
- Sexual behaviour is high-risk especially in the *rural* areas of Nyanza.
- Half of the women in Nairobi who have STD complaints do not seek any care at all or wait very long before seeking care.
- The majority of STD patients in Nairobi visit the private sector, in spite of its rather low quality of care and its high costs.
- Providers in Nairobi insufficiently educate their STD patients on condom use and on the risk to contract HIV.
- Attending an in-service course on STD management significantly improves the quality of STD treatment and STD health education.

Recommendations for control measures

- HIV interventions regarding commercial sex should target clients of sex workers, and they should be implemented in bars, nightclubs and lodges.
- HIV prevention programmes should promote condom use in regular sex worker-client relationships.
- Community interventions should educate women about early recognition of STDs and the benefits of prompt care seeking.
- Interventions should be initiated to improve the quality of STD care in private clinics and pharmacies in Nairobi.

Recommended areas for future (intervention) research

- Strategies to target clients of female sex workers and to promote condoms in long-term sex worker-client relationships.
- Effective interventions to improve the quality of STD care in the private sector in developing countries.

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Samenvatting

Dit proefschrift onderzoekt belangrijke determinanten van de heteroseksuele verspreiding van hiv in Kenia, namelijk seksueel gedrag, gezondheidszorg zoekgedrag voor seksueel overdraagbare aandoeningen (soa), en de kwaliteit van soa zorg. De studies verdiepen het begrip van de verspreiding van hiv en helpen om effectieve preventie strategieën te identificeren om de hiv epidemie te bestrijden.

Hoofdstuk 1 geeft een inleiding over de aids epidemie, interventies om een hiv infectie te voorkomen, en de onderzoeksvragen die in dit proefschrift worden behandeld. Sub-Sahara Afrika is de regio die het hardst is getroffen door hiv/aids: van de 4,9 miljoen mensen die wereldwijd geïnfecteerd raakten in 2004, wonen er ongeveer 3,1 miljoen in dit subcontinent. De aids epidemie heeft een verwoestende impact op de gezondheid en de levens van mensen in sub-Sahara Afrika, inclusief Kenia. De levensverwachting is met decennia gedaald in de zwaarst getroffen landen, miljoenen kinderen hebben een of beide ouders aan aids verloren, en veel kinderen gaan niet langer naar school omdat er geen geld is of omdat ze voor een ziek gezinslid moeten zorgen. Op maatschappelijk niveau is de economische groei gedaald, de armoede verhevigd, en het gezondheidssysteem is uitgehold. Ofschoon antiretrovirale therapie (ART) langzaam beschikbaar komt in sub-Sahara Afrika, blijft preventie van hiv infectie de belangrijkste manier om de verspreiding van de hiv epidemie te beteugelen. De voornaamste methode om te voorkomen dat mensen geïnfecteerd raken is hen te overtuigen om hun seksueel gedrag te veranderen, d.w.z. om minder (risicovolle) partners te hebben of om condooms te gebruiken. Een andere belangrijke manier om hiv infectie te voorkomen is het gezondheidszorg zoekgedrag voor soa en de kwaliteit van soa zorg te verbeteren, omdat soa de transmissie van het hiv virus vergemakkelijken.

Gerelateerd aan deze methoden van hiv preventie worden de volgende onderzoeksvragen in dit proefschrift behandeld: 1) Wat is het seksueel gedrag van de huidige hoog-risico groepen in de transmissie van hiv en soa (prostituees, hun klanten, en jonge mensen), en zijn er verschillen tussen urbane en rurale gebieden; 2) Wat is het gezondheidszorg zoekgedrag van mensen met soa klachten; en 3) Wat is de kwaliteit van soa behandeling?

In **Hoofdstuk 2** onderzochten we het seksueel gedrag van vrouwelijke prostituees in urbane en rurale gebieden van Nyanza, de provincie in Kenia die de hoogste hiv-prevalentie heeft. Interventies voor prostituees zijn meestal op urbane gebieden gericht en benadrukken veelal het belang van condoomgebruik in commerciële seks contacten. We wilden daarom het seksueel gedrag van prostituees in urbane en rurale gebieden vergelijken, en het condoomgebruik met klanten en met vaste partners. Na een persoonlijk interview hielden 63 prostituees 14 dagen lang een seksueel dagboek bij. In dit dagboek

gaven ze dagelijks elke partner aan met wie ze seks hadden gehad, het type relatie (vaste partner of klant), het type seks (vaginaal, oraal, en/of anaal), of er een condoom was gebruikt in elke seksuele handeling, en de prijs die was betaald. Analyse van de interviews en dagboeken liet zien dat de meeste prostituees gescheiden waren en dat ze een of twee vaste partners hadden, die meestal met iemand anders getrouwd waren. Prostituees die in de stad woonden hadden meer klanten in de afgelopen 14 dagen dan vrouwen uit de rurale districten. Beide groepen hadden evenveel seks met vaste partners. Condoomgebruik met klanten was behoorlijk hoog (ongeveer 75%), maar met vaste partners werd een condoom in minder dan 40% van de seks acts gebruikt. Voor zowel urbane als rurale gebieden was het gemiddelde aantal seks acts waarin geen condoom werd gebruikt hoger voor vaste partners (respectievelijk 3,2 and 2,8) dan voor klanten (respectievelijk 1,9 en 1,0). Prostituees in urbane en rurale gebieden in Nyanza hebben dus vaker onveilige seks met vaste partners dan met klanten. Omdat de vaste partners zelf meestal meerdere gelijktijdige kortdurende en langdurige relaties hebben, zoals wordt beschreven in hoofdstuk 3, zijn ze minstens zulke hoog-risico partners (of zelfs meer) dan de wisselende klanten van de prostituees. Interventies voor prostituees zouden zich daarom ook moeten richten op condoomgebruik in vaste relaties.

Hoofdstuk 3 bestudeert de klanten van de vrouwelijke prostituees in de Nyanza provincie. Omdat prostitutie in Nyanza meestal vanuit bars wordt bedreven, hebben we mannen in bars, nachtclubs en pensions gevraagd naar hun prostituee bezoek. We hielden een informele conversatie met 64 klanten, om hen te ondervragen over hun socio-demografische achtergrond en seksueel risicogedrag. De meerderheid van de klanten was tussen de 25 en 36 jaar oud, getrouwd, en had buitenechtelijke partners naast het bezoeken van prostituees. De meeste klanten hadden afgelopen jaar meerdere (3-5) verschillende prostituees bezocht, waarvan ze met minstens 2 een langdurige, vaste prostituee-klant relatie hadden. Klanten bezochten gemiddeld een tot twee maal per week een prostituee. De meeste klanten gebruikten niet consistent een condoom met prostituees. De voornaamste reden hiervoor was dat ze hun vaste prostituees 'vertrouwden'. De betekenis van het concept *vertrouwen* bleek veel te variëren. Slecht een minderheid geloofde dat ze de enige klant waren, en het financieel onderhouden van een prostituee werd soms gezien als een garantie voor trouw. Voor anderen betekende het vertrouwen van hun prostituee dat ze geloofden dat de prostituee geen soa had, dat ze elkaar al een tijdje kenden, of dat ze geloofden dat ze de enige klant waren met wie de prostituee geen condoom gebruikte. Commerciële seks in Nyanza omvat dus vaak meervoudige vaste relaties met laag condoomgebruik, in plaats van snel wisselende eenmalige contacten met hoog condoomgebruik. Interventies zouden zich moeten richten op klanten in bars, nachtclubs en pensions, en zouden zich erop moeten focussen om hen te overtuigen om zowel met wisselende als met vaste prostituees condooms te gebruiken.

We hebben ook het seksueel gedrag van jong volwassenen van 15-29 jaar in Nyanza bestudeerd (**Hoofdstuk 4**). Hiv interventies in sub-Sahara Afrika zijn vaak gericht op urbane gebieden, waar verondersteld wordt dat het seksueel gedrag risicovoller is dan in

rurale gebieden. We hebben daarom rurale en urbane gebieden vergeleken wat betreft seksueel risicogedrag onder jong volwassenen. In Kisumu stad en de rurale districten Siaya en Bondo werden huishoudens bezocht, en 584 jong volwassenen werden geïnterviewd middels een gestructureerde vragenlijst. De resultaten lieten zien dat voor vrouwen het seksueel gedrag risicovoller was in rurale dan in urbane gebieden, ook na het in acht nemen van sociodemografische verschillen tussen stad en platteland. Rurale vrouwen rapporteerden minder vaak een maagd te zijn ten tijde van hun huwelijk, ze rapporteerden een hoger totaal aantal partners, en een minder consistent condoomgebruik met vriendjes. Voor mannen was het seksueel risicogedrag in urbane en rurale gebieden gelijk. We concluderen daarom dat het potentieel van verdere hiv verspreiding in ruraal Nyanza groot is. Hiv/soa interventies zouden daarom uitgebreid moeten worden van urbane naar rurale gebieden in Nyanza. In het bijzonder zou het lage condoomgebruik in rurale gebieden aangepakt moeten worden door het verbeteren van zowel condoom acceptatie als verkrijgbaarheid.

Hoofdstuk 5 beschrijft het gezondheidszorg zoekgedrag van mensen met soa klachten. De meeste studies over gezondheidszorg zoekgedrag voor soa zijn uitgevoerd vanuit klinieken, d.w.z. ze vragen soa patiënten in een kliniek naar welke gezondheidszorg verstrekkers ze zijn geweest voordat ze naar de kliniek kwamen. Deze studies missen het gedeelte van de populatie die nooit een kliniek bezoekt, of die in het geheel geen zorg zoeken. We hebben daarom een studie opgezet op populatie niveau om het gezondheidszorg zoekgedrag voor soa in Nairobi te bestuderen. Van de 1929 mensen die we in huishoudens ondervraagd hebben, hadden er 307 (16%) een of meerdere soa-gerelateerde klachten in de afgelopen 12 maanden. Van hen zocht 20% van de mannen en 35% van de vrouwen geheel geen zorg, voornamelijk omdat ze de symptomen niet als ernstig zagen, omdat de symptomen weer verdwenen, of uit geldgebrek. Deze verwaarloosde soa kunnen resulteren in ernstige complicaties en gevolgen, die kunnen leiden tot lange-termijn gezondheidsproblemen zoals onvruchtbaarheid. Ook kunnen pasgeborenen aangeboren infecties oplopen of tijdens de geboorte geïnfecteerd reaken. Van de mensen die gezondheidszorg zochten, wachtten vrouwen langer dan mannen voordat ze zorg zochten (41 versus 16 dagen). De meeste mannen en vrouwen gingen naar de privé-sector (respectievelijk 72% en 57%). Dit is spijtig, omdat privé-klinieken de minst adequate soa zorg verstrekken van alle typen formele gezondheidszorg instellingen (inclusief apotheken), terwijl ze de hoogste prijzen heffen (hoofdstuk 7). Relatief meer vrouwen dan mannen bezochten de overheidssector (28% versus 15%). Deze publieke klinieken zijn relatief goedkoop en ze presteren het beste wat betreft soa behandeling en voorlichting (hoofdstuk 7). De informele sector werd niet vaak bezocht (door 13% van de mannen en 16% van de vrouwen). Omdat vrouwen meestal monogaam waren, relateerden ze hun klachten niet aan seksuele gemeenschap, wat het tijdig zorg zoeken vertraagde. Vrouwen zouden daarom overtuigd moeten worden om tijdig zorg te zoeken, d.w.z. door gezondheidsvoorlichting in de gemeenschap. Verder zouden mensen aangemoedigd

moeten worden om zorg te zoeken bij overheidsklinieken, door het benadrukken van zowel de hoge kwaliteit van zorg als de betaalbaarheid van deze instellingen.

Hoofdstuk 6 geeft een toelichting op de opzet van onze studies om de kwaliteit van soa zorg in Nairobi vast te stellen (beschreven in hoofdstuk 7 en 8). In deze studies werden alle gezondheidsinstellingen uit de formele sector bestudeerd die zich bevonden in 5 geselecteerde sublocaties van Nairobi. Instellingen in aangrenzende gebieden en in het stadscentrum die vaak werden bezocht door mensen uit de geselecteerde gebieden (zoals geïdentificeerd in de gezondheidszorg zoekgedrag studie van hoofdstuk 5) werden ook meegenomen, evenals alle publieke klinieken in Nairobi die speciaal zijn toegerust ('versterkt') voor de behandeling van soa. Het inclusie criterium was dat een instelling minstens 4 soa patiënten moest hebben behandeld in de afgelopen week. De volgende 6 typen instellingen deden mee in de studies: publieke klinieken toegerust voor soa, publieke klinieken niet speciaal toegerust voor soa, privé-klinieken, apotheken, missie klinieken, en non-gouvernementele organisatie- (NGO) of gemeenschaps-klinieken. Van de deelnemende instellingen werden alle gezondheidswerkers die op een willekeurige dag aanwezig waren bestudeerd met 3 methoden: interviews, observaties van gezondheidswerker-patiënt interacties, en gesimuleerde patiënten. In totaal werden 192 gezondheidswerkers bestudeerd in 142 instellingen, en geobserveerd terwijl ze 441 soa patiënten behandelden.

De resultaten wat betreft kwaliteit van het afnemen van de anamnese, lichamelijk onderzoek en behandeling worden beschreven in **Hoofdstuk 7**. Behandeling in Nairobi werd meestal gebaseerd op de syndromische benadering, waarbij medicijnen worden gegeven voor alle mogelijk oorzaken, zonder microscopische testen uit te voeren om de precieze oorzaak vast te stellen. Voor de observaties varieerde het correct afnemen van de anamnese van 60% tot 92% voor de verschillende typen instellingen, correct lichamelijk onderzoek varieerde van 31% tot 66%, en correcte behandeling varieerde van 30% tot 75%. Het percentage correctheid op alle drie de aspecten – Wereld Gezondheids Organisatie (WHO) Preventie Indicator (PI) 6 – liep uiteen van 14% tot 48%. Publieke klinieken toegerust voor soa zorg presteerden het best in alle aspecten, terwijl behandeling het slechts was in apotheken en privé-klinieken (die respectievelijk 38% en 30% van hun soa patiënten correct behandelden). Voor het afnemen van de anamnese, lichamelijk onderzoek en PI6 waren de interview scores in het algemeen hoger dan de observatie scores, terwijl de gesimuleerde patiënt scores het laagst waren. De kennis van de gezondheidswerkers – gemeten in de interviews – werd dus niet vertaald in dagelijkse praktijk – gemeten in de gesimuleerde patiënt bezoeken. Wat betreft behandeling scoorden apotheken en privé-klinieken minder dan 40%, zelfs in het interview, wat aangeeft dat de kennis van syndromische behandeling zeer ontoereikend is in deze instellingen. Over het geheel scoorden gezondheidswerkers die getraind waren in soa zorg beter dan collega's zonder training, en dokters scoorden niet beter dan verpleegkundigen of andere gezondheidswerkers wat betreft behandeling. Concluderend kunnen we stellen dat de kwaliteit van soa zorg in Nairobi ontoereikend was behalve in publieke klinieken toegerust

voor soa behandeling. Dit geeft de noodzaak aan tot verbetering door interventies zoals verdere training in syndromische behandeling (met name in apotheken en privé-klinieken), verbeterde supervisie, en de invoering van voorverpakte syndromische behandelkits.

Hoofdstuk 8 geeft de resultaten van de studie in Nairobi naar kwaliteit van zorg wat betreft verschillende aspecten van gezondheidsvoorlichting gedurende soa behandeling. Voor observaties waren de scores hoog voor voorlichting over partner behandeling (74%-80%) en therapietrouw (83%), maar ontoereikend voor counseling (52%) en condoom promotie (20%-41%). De score voor de WHO indicator voor soa voorlichting PI7 (condoom promotie plus partner behandeling) was laag (38%). Publieke klinieken toegerust voor soa zorg presteerden over het algemeen het beste, terwijl apotheken en missie klinieken het slechts presteerden. Vergelijking van de drie methoden gaf aan dat ook voor aspecten van gezondheidsvoorlichting, kennis niet geheel in dagelijkse praktijk werd vertaald. Gezondheidswerkers die een interne soa training hadden gevolgd presteerden ongeveer twee maal zo goed wat betreft condoom promotie en counseling dan collega's die dat niet hadden. Interventies om de huidig ontoereikende kwaliteit van soa voorlichting te verbeteren zouden kunnen zijn: een wijde verspreiding van voorlichtingsmateriaal, voortdurende training en supervisie van gezondheidswerkers, implementatie van een soa behandeling checklist, en de invoering van voorverpakte syndromische behandelkits.

In **Hoofdstuk 9** wordt de rol van traditionele genezers in soa behandeling geëxploreerd. Met 16 genezers (7 medicijnmannen, 5 kruidenkundigen, en 4 spiritueel genezers) werden diepte-interviews gehouden in 4 sloppenwijken in Nairobi. Alle genezers geloofden dat soa seksueel overdraagbaar zijn en herkenden de belangrijkste symptomen. Het aantal soa patiënten dat ze behandelden varieerde sterk, met een gemiddelde van 1 per week. Medicijnmannen en kruidenkundigen gaven een kruidenmedicatie voor gemiddeld 7 dagen, terwijl spiritueel genezers tot de goden baden. Dertien genezers gaven het advies tot seksuele onthouding gedurende de behandeling, 11 gaven advies over partner behandeling, 4 over partnertrouw, en 3 over condoomgebruik. Alle genezers vroegen hun patiënten om terug te keren voor controle, en 13 rapporteerden dat ze patiënten wiens klachten voortduurden naar publieke of privé gezondheidsinstellingen doorverwezen. Traditioneel genezers blijken daarmee een bescheiden maar significante rol te spelen in soa behandeling in Nairobi. Hun bijdrage aan soa voorlichting zou versterkt kunnen worden, vooral wat betreft de promotie van condooms en partnertrouw.

Hoofdstuk 10 kijkt terug op de onderzoeksvragen en de resultaten van de studie in de context van oudere en recente literatuur, en beschrijft de implicaties van onze studies voor hiv preventie en bestrijding in Kenia. De conclusies en aanbevelingen die uit het onderzoek van dit proefschrift volgen worden geformuleerd in dit hoofdstuk en in deze samenvatting herhaald.

Conclusies

- Klanten van prostituees zijn een 'core group' in de transmissie van hiv in de provincie Nyanza. Met name langdurige prostituee-klant relaties zijn risicovol voor de transmissie van hiv.
- Seksueel gedrag is risicovol met name in de *rurale* gebieden van Nyanza.
- De helft van de vrouwen met soa klachten in Nairobi zoekt geheel geen zorg of wacht zeer lang met zoeken.
- De meerderheid van de soa patienten in Nairobi bezoekt de privé-sector, ondanks zijn tamelijk lage kwaliteit van zorg en zijn hoge kosten.
- Gezondheidswerkers in Nairobi geven onvoldoende voorlichting aan hun soa patiënten wat betreft condoomgebruik en het risico om hiv op te lopen.
- Het volgen van een interne training over soa behandeling verbetert de kwaliteit van soa zorg en soa voorlichting aanzienlijk.

Aanbevelingen voor bestrijdingsmaatregelen

- Hiv interventies gericht op prostitutie zouden zich op klanten van prostituees moeten richten, en ze zouden geïmplementeerd moeten worden in bars, nachtclubs en pensions.
- Hiv preventie programma's zouden condoomgebruik in vaste prostituee-klant relaties moeten promoten.
- Gemeenschapsinterventies zouden vrouwen moeten scholen in vroegtijdige herkenning van soa en de voordelen van tijdig zorg zoeken.
- Er zouden interventies geïnitieerd moeten worden om de kwaliteit van soa te verbeteren in privé-klinieken en apotheken in Nairobi.

Aanbevolen gebieden voor toekomstig (interventie) onderzoek

- Strategieën om klanten van prostituees te bereiken en om condooms in langdurige prostituee-klant relaties te promoten.
- Effectieve interventies om de kwaliteit van soa zorg in de privé-sector in ontwikkelingslanden te verbeteren.

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Curriculum vitae

Hélène Voeten was born on the 5th of July 1968 in Venlo. She received her gymnasium beta diploma at the St. Thomascollege in 1986. She then did a study-orientation year at the Vrije Hogeschool in Driebergen. Subsequently, she studied history of art at the State University Utrecht, for which she specialised herself in Asian art. She stayed two months with a priest family in South-India, to study bronze temple statues and the rituals that are performed with them. Parallel to her study history of art she studied cultural anthropology, also at the State University Utrecht, for which she focused on Africa. She stayed half a year in Namibia, where she lived with a rural family to do research on teenage pregnancies. She graduated in history of art in 1996, a year thereafter she graduated with honours in cultural anthropology. She worked half a year in Namibia as a consultant for GTZ, a German development organisation, to study youth and AIDS. She also worked half a year as a volunteer at Vluchtelingenwerk in Utrecht to assist asylum seekers.

Since January 1998 she works as a scientific researcher at the Department of Public Health at the Erasmus MC, University Medical Center Rotterdam. Here she conducted the research described in this thesis. She travelled regularly to Kenya, to design the studies together with the Kenyan co-researchers, to train the research assistants, and to present the study findings in workshops and national conferences. In 2001 she had her daughter Nina and in 2004 her son Robin. Also in 2004 she got her Master of Science diploma Epidemiology at the Netherlands Institute of Health Sciences. The past few years she has studied the relationship between migration/mobility and HIV spread in Africa, through collaboration with research projects in Tanzania and Zimbabwe. More recently, she also studies risk perception of SARS and other emerging infectious diseases. She will tutor two PhD students from Kenya and Barbados on HIV-related topics. She also plans to study the evaluation of antiretroviral therapy in Africa.

Curriculum vitae

Hélène Voeten werd op 5 juli 1968 geboren te Venlo. Ze behaalde daar in 1986 het gymnasium beta diploma aan het St. Thomascollege. Daarna volgde ze een studie-orientatiejaar aan de Vrije Hogeschool in Driebergen. Vervolgens ging ze kunstgeschiedenis studeren aan de Rijksuniversiteit Utrecht (tegenwoordig Universiteit Utrecht), waarbij ze zich specialiseerde in Aziatische kunst. Ze verbleef twee maanden bij een priesterfamilie in zuid-India, om onderzoek te doen naar bronzen tempelbeelden en de rituelen die ermee worden uitgevoerd. Parallel aan haar studie kunstgeschiedenis begon ze aan de studie culturele antropologie, eveneens aan de Rijksuniversiteit Utrecht, waarbij ze zich richtte op Afrika. Ze verbleef een half jaar in Namibië, waar ze bij een lokale familie woonde om onderzoek te doen naar tienerzwangerschappen. In 1996 studeerde ze af voor kunstgeschiedenis, een jaar later studeerde ze cum laude af voor culturele antropologie. Daarna werkte ze een half jaar in Namibië als consultant voor GTZ, een Duitse ontwikkelingsorganisatie, om onderzoek te doen naar jongeren en aids. Ook werkte ze een half jaar als vrijwilliger bij Vluchtelingenwerk in Utrecht om asielzoekers te begeleiden.

Sinds januari 1998 is ze als wetenschappelijk medewerker verbonden aan het instituut Maatschappelijke Gezondheidszorg van het Erasmus MC, Universitair Medisch Centrum Rotterdam. Hier verrichtte ze het onderzoek beschreven in dit proefschrift. Ze reisde regelmatig naar Kenia, om de studies samen met de Keniaanse co-onderzoekers vorm te geven, om de onderzoeksassistenten te trainen, en om de onderzoeksgegevens te presenteren op workshops en nationale conferenties. In 2001 beviel ze van dochter Nina en in 2004 van zoon Robin. In 2004 behaalde ze tevens haar Master of Science diploma Epidemiologie aan het Netherlands Institute of Health Sciences. De afgelopen jaren heeft ze zich bezig gehouden met onderzoek naar de relatie tussen migratie/reisgedrag en hiv-verspreiding in Afrika, door samenwerking met onderzoeksprojecten in Tanzania en Zimbabwe. Daarnaast doet ze sinds kort ook onderzoek naar risicoperceptie van SARS en andere opkomende infectieziekten. Ook gaat ze twee promovendi uit Kenia en Barbados begeleiden op hiv-gerelateerde onderwerpen. In de toekomst wil ze zich richten op onderzoek naar de evaluatie van antiretrovirale therapie in Afrika.

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