Sexual Behaviour and Sexually Transmitted Infections Among Urban Ugandan Youth – Perceptions, Attitudes and Management

EVA-BRITTA RÅSSJÖ
Dissertation presented at Uppsala University to be publicly examined in Rosénalen, University Hospital, Uppsala, Friday, February 3, 2006 at 09:15 for the degree of Doctor of Philosophy (Faculty of Medicine). The examination will be conducted in English.

Abstract

The aims of this thesis were to expand the knowledge about sexual and reproductive health among urban Ugandan youths, living in a slum, and to evaluate the national flow-chart for management of the abnormal vaginal discharge (AVD) syndrome in adolescent girls. Data collection included individual interviews, focus-group discussions and clinical investigations with tests for chlamydia trachomatis (CT), neisseria gonorrhoea (NG), trichomonas vaginalis (TV), syphilis, and HIV infection. Poverty, peer pressure and gender power imbalance were obstacles to safe sexual practices: to abstain from sex, be faithful or to use condoms. Prevalence among the 199 female and 107 male adolescents for CT, NG, TV, syphilis and HIV was 4.5%, 9.0%, 8.0%, 4.0% and 15.2% for females and 4.7%, 5.7%, 0%, 2.8% and 5.8% for males. The national AVD flow-chart had a sensitivity of 61%, a specificity of 38.5% and a positive predictive value (PPV) of 11.6%. A flow-chart using risk factors, rather than symptoms, implicated a sensitivity/specificity and PPV of 82.6%/47% and 17.3% respectively. Socially disadvantaged females had a high risk to be HIV infected and HIV infection was associated to other STIs. Females were more likely than males to have any of the infections studied. Voluntary counselling and testing (VCT) for HIV was considered as helpful in preventing the spread of HIV. Obstacles for testing were: lack of time and money, fear of stigmatisation and fear that the knowledge of HIV positive status could shorten someone's life. An alternative flow-chart for management of AVD among adolescent girls should be evaluated. Girl's opportunities for education and income generating work should be a priority. VCT services for young people should be made accessible in terms of cost, time and quality of counselling.

Keywords: Adolescents, Uganda, Syndromic approach, STI, VCT for HIV, Safe sex behaviour

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ISSN 1651-6206
ISBN 91-554-6437-8
urn:nbn:se:uu:diva-6264 (http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-6264)
To the young people in Kampala
Papers included in the thesis

The thesis is based on the following Papers, which are referred to in the text by their Roman numerals:

I   Råssjö E-B, Darj E
    “Safe sex advice is good – but so difficult to follow“: views and experiences of the youth in a health care centre in Kampala, Uganda

II  Råssjö E-B, Kambugu F, Tumwesigye MN, Tenywa T, Darj E
    Prevalence of Sexually Transmitted Infections among adolescents in Kampala, Uganda, and theoretical models for improving syndromic management
    Journal of Adolescent Health, accepted October 2004

III Råssjö E-B, Mirembe F, Darj E
    Vulnerability and risk factors for sexually transmitted infections and HIV among adolescents in Kampala, Uganda
    AIDS Care, in press 2005

IV  Råssjö E-B, Darj E, Konde-Lule J, Olsson P
    Perceptions of HIV/AIDS and attitudes to voluntary HIV counselling and testing among youth in Kampala, Uganda
    Submitted

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# Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABC</td>
<td>Abstain, Be faithful, Condom use</td>
</tr>
<tr>
<td>ACASI</td>
<td>Audio Computer Assisted Self-interview</td>
</tr>
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<td>AIC</td>
<td>AIDS Information Centre</td>
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<tr>
<td>ARV</td>
<td>Anti Retro-Viral</td>
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<tr>
<td>AVD</td>
<td>Abnormal Vaginal Discharge</td>
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<tr>
<td>CI</td>
<td>Confidence Interval</td>
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<tr>
<td>CT</td>
<td>Chlamydia Trachomatis</td>
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<tr>
<td>FGD</td>
<td>Focus-Group Discussion</td>
</tr>
<tr>
<td>GUD</td>
<td>Genital Ulcer Disease</td>
</tr>
<tr>
<td>LCR</td>
<td>Ligase Chain Reaction</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>NG</td>
<td>Neisseria Gonorrhoea</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
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<tr>
<td>OR</td>
<td>Odds Ratio</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
</tr>
<tr>
<td>PID</td>
<td>Pelvic Inflammatory Disease</td>
</tr>
<tr>
<td>PPV</td>
<td>Positive Predictive Value</td>
</tr>
<tr>
<td>RPR</td>
<td>Rapid Plasma Reagin</td>
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<tr>
<td>RTI</td>
<td>Reproductive Tract Infections</td>
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<tr>
<td>STD</td>
<td>Sexually Transmitted Disease</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually Transmitted Infection</td>
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<tr>
<td>TASO</td>
<td>The AIDS Support Organisation</td>
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<tr>
<td>TPHA</td>
<td>Treponema Pallidum Hem Agglutinine</td>
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<tr>
<td>TV</td>
<td>Trichomonas Vaginalis</td>
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<tr>
<td>UBOS</td>
<td>Ugandan Bureau of Statistics</td>
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<tr>
<td>UNFPA</td>
<td>United Nations Population Fund</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>UPE</td>
<td>Universal Primary Education</td>
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<tr>
<td>VCT</td>
<td>Voluntary Counselling and Testing</td>
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<tr>
<td>VDRL</td>
<td>Veneral Disease Research Laboratory</td>
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<td>WHO</td>
<td>World Health Organization</td>
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</table>
Introduction

The research ideas that eventually resulted in this thesis started in 1998 when I had the opportunity to work in a youth health project, Muvubuka Agunjuse (well informed youth), in Kampala, Uganda. Coming from a prosperous country where everyone has the right to health care irrespective of age, sex and wealth, to a situation with almost everything being sparse was overwhelming. In the Swedish youth clinic, where I had worked previously, two midwives, one gynaecologist, one paediatrician, one psychologist and one social worker served the youth who most of the time came on prescheduled visits: the staff was paid monthly. Records were kept and could easily be found when the youths came for a follow-up visit as everyone has a personal identification number. If a blood test or a sample for a sexually transmitted infection (STI) test was warranted this was done without any cost for the patient. The patients could be easily reached by telephone or mail to forward the result. There was a well functioning referral system for cases that needed services not provided by the youth clinic. The prevalence of different STIs and pregnancies was known through a data collecting system and trends over time could be followed.

In the youth clinic Muvubuka Agunjuse, one midwife and one social worker were trying their best to help the youths who would drop in during the day. They had no other tools but their own hands and skills. The project was started in 1997 by the Buganda Kingdom and was funded by The Population Fund (UNFPA). After the first year, the funding was withdrawn and since then the midwife, social worker and the peer communicators have been working mainly on a volunteer basis. Drugs for STI treatment were available intermittently. The clinic was equipped with an examination coach but it was complicated to use it for a gynaecological examination and there was no light for examination except daylight from the window. Someone had to stand outside to keep others away from the window when an examination was done. Most young women had never been examined before and were often very reluctant to the procedure. There were no resources for laboratory tests at the clinic and to have a blood test for syphilis or HIV the patient had to go to another clinic or private laboratory, where s/he had to pay for the test. No information on prevalence of STIs was available, although almost all the girls who came to the clinic with complaints of vaginal discharge were treated with three different antibiotics according to national recom-
mendations. As no laboratory tests were done, there was no feedback to the health workers. The youths treated could not be followed up in a systematic way: the records consisted of a logbook with name, sex, age and treatment noted.

Many girls attending the clinic who had complaints of vaginal discharge, just like Swedish teenage girls, had a normal physiological discharge. The multi-drug treatment recommended in the national guidelines did not appear appropriate. Costs, side effects, the risk of resistance development, and a label as being infected by an STI, were all factors to consider. Many youths complained of vague symptoms if any, or they had already been given treatments without improvement. This experience provided the idea of studying the prevalence of some of the treatable STIs: Chlamydia trachomatis (CT), Neisseria gonorrhoea (NG), and Trichomonas vaginalis (TV) and syphilis, and evaluating the national recommendations for management of STIs, particularly the abnormal vaginal discharge (AVD) syndrome (Paper II).

Qualitative interviewing (Malterud, 1998) was used in order to learn more about the language used by the youths and their perceptions on STIs. During the process of interviewing, the view on STI prevention through the ABC method became central. (The ABC concept is described below.)

As the prevalence study was planned, the infections to include were considered based on available resources, but other factors were also considered. Testing for CT and NG was important, as these infections are believed to cause most cervical infections (Adler, 1996; Cates & Wasserheit, 1991). There was access to a diagnostic method, polymerase chain reaction (PCR), with high sensitivity and specificity (Mabey, 2002), and this method could also be used for the diagnosis of TV (Madico et al., 1998). Syphilis testing was included as many patients asked for this test. The research was restricted to adolescents under 20 years as the focus was infections in young people. If those up to 24 (as is the age limit for the clinic) had been included, few teenagers and an unknown number of people 25 years and above would probably also have been included: many people in Uganda do not know their exact date of birth and some people might have taken the opportunity to have a free test.

Testing for HIV was decided against for two reasons: some youth would have abstained from participating had an HIV test been compulsory and HIV testing at the Muvubuka Agunjuse clinic would have required a lot more resources in terms of trained counsellors and equipment. Even so, HIV prevalence in such a setting is relevant and a year after data collection for the prevalence study, ethical clearance was granted for examining anonymous blood samples for HIV (results are presented in Paper III).
Many youths expressed worries about syphilis when they visited the clinic whereas concern about HIV was seldom mentioned. Conversely, in the interviews, HIV was revealed as being of great concern to many. The questionnaire answers indicated that few had tested and there were many reasons for not testing. These reasons were explored to learn more about what was important in the decision to accept or abstain from HIV testing (Paper IV). The appropriate methodology for this purpose was a qualitative approach.

Uganda, history and social development

Uganda is a land locked country on the northern shores of Lake Victoria. The neighbouring countries are Kenya, Tanzania, Rwanda, Congo and Sudan. Uganda has a mild tropical climate and the southern, densely populated part, is very fertile.

In the “scramble of Africa” between the British, French and Germans in East Africa, Uganda became a British Protectorate in 1894. Uganda as a nation was an imperial construction with borders cutting across existing economic, political and social relationships. In the territory constituting Uganda, there were several kingdoms: the Buganda kingdom was the most powerful and was located in the central area of the new country. After independence in 1962, a long period of political unrest followed. In 1986, the National Resistance Movement reclaimed the country from a dictatorship and more than 20 years of political turmoil (Leggelt, 2004). Although the gross domestic product per capita average annual growth rate from 1990 to 2003 was 3.8% (UNICEF, 2005), the people of Uganda remained among the poorest in the world. The level of absolute poverty is 44% with still higher levels in the northern part of the country (UNFPA, 2005). In some of the northern districts, terrorists severely disturb the every day life of the people by attacking villages and schools and abducting children and youths (Temmerman, 2001).

According to the 2002 census, the total population is 24.6 million with about 50% below the age of 15 (UBOS, 2002). The population is growing at an average of 3.4%/year. If this rate is maintained, the population will rise to 54 million in 2025. The majority of the population (87%) live in rural areas and the adult literacy rate is 68% (UNICEF, 2005). The official language is English, but there are over 18 different tribes using several local languages. The most commonly used language in the Kampala region is Luganda, the language spoken by the Baganda tribe.
Health and health care in Uganda

Table 1 demonstrates some of the most important health status indicators. The age structure is a pyramid with a broad base, where those under 15 years constitute 50% of the total population (UBOS, 2001). Life expectancy at birth has declined from over 50 years in the 1970s to 47 years (WHO/OMS, 2001). Total fertility rate remains high and many women die during pregnancy and childbirth (Bangser, 1998).

The Ugandan health care is organized with the community health center as a base and the district hospital at the top (Ebanyat, 1999). The health center is supposed to provide all the preventive and curative health activities within the population and give technical support and supervise community based health workers like traditional birth attendants, community reproductive health workers and traditional healers.

At the district level, there is a general hospital with the main purpose of providing secondary curative health services to the people referred from lower levels. In some districts, there are also referral hospitals with more specialized services. Mulago Hospital in Kampala is the national referral hospital.

Until 1998, when a process of decentralization of health care was initiated, the Ministry of Health (MOH) played a major role in detailed planning and implementation of health care in Uganda (Jeppsson, 2004). The MOH has the responsibility for training, planning, monitoring, evaluation and developing policy guidelines, and setting standards. In addition to government health care institutions, there are a large number of private caregivers and non-governmental organisations (NGOs) providing health care.

Table 1. Selected health status indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator Value</th>
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<tbody>
<tr>
<td>Life expectancy at birth</td>
<td>47 years</td>
</tr>
<tr>
<td>Total fertility rate</td>
<td>6.9</td>
</tr>
<tr>
<td>Maternal mortality rate</td>
<td>506/100 000 live births</td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td>97 per 1000 live births</td>
</tr>
<tr>
<td>Percentage of women attended at delivery by a trained health person</td>
<td>38%</td>
</tr>
<tr>
<td>Contraceptive prevalence rate</td>
<td>15%</td>
</tr>
<tr>
<td>Teenage pregnancy</td>
<td>43%</td>
</tr>
</tbody>
</table>

Ebanyat, F. Sexual and Reproductive Health Minimum Package for Uganda. 1999, MOH, Department of Community Health, Reproductive Health Division (Ebanyat, 1999)
This is an ideal situation. However, in reality, economic constraints make it difficult to keep up the standards and to provide quality care. Health centers and hospitals are usually under-staffed and ill-equipped (Jeppsson et al., 2005), shortage of drugs and consumables makes it impossible to treat according to guidelines and recommendations. This means that those who need health services turn to the informal sector of private care givers, traditional healers etc. About 80% of the Ugandan population rely on traditional medicine, which is more accessible (Weisheit, 2003). Prescribing practices in the public and the private sector are often inappropriate with unnecessary poly-pharmacy for common conditions like malaria and acute respiratory infections (Ogwal-Okeng et al., 2004). There is reason to believe that similar problems exist for the management of STIs.

The situation for young people in Uganda

Young people (10-24-year-olds) constitute about 33% of the total Ugandan population. The term ‘Adolescents’ refers to the ages 10-19 and they constitute 24% of the population. The term ‘Youth’ refers to those between 15 and 24 years (MOH, 2000).

According to Uganda Demographic and Health Survey 2000-2001, 58% of all children below 18 years are living with both parents, and 18% are living without their natural father or natural mother. An orphan is defined as a person under 18 years who has lost at least one of his/her biological parents: 14% of Ugandan children are orphans and it is more common in urban than in rural sites that children live without their parents (UBOS, 2001).

Community norms and values relevant to adolescent sexual and reproductive health are relatively similar across the country, although there are many different ethnic groups. Traditionally, virginity was rated highly and there were gifts given to the paternal aunt if the husband found that the bride was a virgin at the wedding. However, this practice has long ago ceased to be of importance and early exposure to unprotected sex and early marriage makes girls vulnerable to STIs and HIV (Neema et al., 2004).

Approximately 50% of all HIV infected people in Uganda are youths and the vast majority of these are females. The female-to-male ratio of HIV infection in adolescents is 4:1 whereas it is 1:1 among adults (Neema et al., 2004).

Universal Primary Education (UPE) was introduced in 1997. Four children from each family and all orphans were allowed to attend school without paying school fees. In 2002 President Museveni decided that all children of school-going age should benefit from UPE (Aguti, 2002). School enrolment
increased from 2.6 million in 1995 to 7.6 million in 2003. Primary school has seven grades and normally starts when the child is 5 to 6 years old. Still many children do not have access to education as the parents have to provide books, pens, school uniforms and meals. Among those who start school, the rate of drop out is high, especially among girls (Neema et al., 2004). One reason for this is early pregnancy and marriage and the issue of pregnancies among schoolgirls is often discussed in Ugandan mass media. An education ministry spokesman recently said in an interview that girls who get pregnant while in school are immediately expelled, because “school authorities define pregnancy as bad behaviour and consequently sets a bad example for others” (Nabusoba, 2005). It is common that girls are screened for signs of pregnancy and forced to leave school if found to be pregnant.

Youth clinics in Uganda

Before the HIV epidemic in Uganda, there was little awareness about health problems among the youth. Those who survived childhood could be assumed to have a robust health until they grew old. However, because HIV is affecting mostly young people, it has become clear that there is a demand for health services for the youth. The Ugandan government has developed a national adolescent health policy (MOH, 2000) for guidance and prioritisation of adolescent sexual and reproductive health intervention. Some of the targets listed are: increased contraceptive use, increased age at first intercourse, increase in practice of safe sex, post-abortion treatment integrated in health facilities, pregnant school girls readmitted to school after delivery, increased knowledge among adolescents about STIs and HIV and improved STI management. Many NGOs and religious and cultural organisations have contributed to improved adolescent sexual and reproductive health for the youth.

Young people tend to avoid health facilities because they lack money for service fees, they don’t want to mix with adults, who could be their neighbours or relatives, when they have reproductive health problems, and they fear to be abused by health workers (Neema et al., 2004). For this reason several organisations provide youth friendly services at separate youth clinics in Kampala and other major towns in Uganda. The Naguru Teenage Information and Health Provision Centre, which started in 1992, was the first and was then followed by several others. They all have the ambition of providing youth friendly services, i.e. high quality counselling and treatment in a friendly atmosphere, with confidentiality guaranteed and at low or no fees. An important component is the involvement of the youths in planning and implementation of other activities in connection to the youth clinics: youth clubs, discussion groups, drama etc. These youth clinics are often funded by
NGOs and if funding is withdrawn, as in the case of the Muvubuka Agunjuse clinic, sustainability is endangered.

The implication of sexually transmitted infections for young people

Reproductive tract infections (RTI) including STIs represent a major public health problem in many developing countries. STIs, both ulcerative and non-ulcerative, are suspected of facilitating HIV transmission (Cohen, 1998; Fonck et al., 2000b; Ghys et al., 1997; Grosskurth et al., 1995; Laga et al., 1993; Wasserheit, 1992). STIs, such as gonococcal and chlamydial infections, cause a number of complications and sequelae, such as pelvic inflammatory disease (PID), ectopic pregnancy, infertility, preterm delivery and puerperal sepsis (Cates & Wasserheit, 1991; De Muylder et al., 1990; Schulz et al., 1987).

Infertility is especially problematic in a culture where motherhood is highly important: if a Ugandan woman does not “produce” after 1-2 years of marriage, she will have to accept that the husband takes another wife (Ross et al., 1999). Research indicates that infertility among Ugandan couples is 20-30% (Bangser, 1998).

Knowledge about HIV is universal in Uganda, whereas knowledge about STIs and related symptoms are less general. According to the Ugandan Demographic and Health Survey 2000-2001 (UBOS, 2001), the majority of the population is aware of STIs but not about the symptoms. Forty-seven percent of women and 25% of men either know nothing at all about STIs or are unable to recognize any symptoms of STIs. This of course has implications for health-seeking behaviour and there are indications in an interview study with bodaboda men (motorcycle taxi drivers), that STIs are perceived to have lost their seriousness in the shadow of the AIDS epidemic (Nyanzi et al., 2005). Participants argue that syphilis and gonorrhoea disappeared with the coming of HIV/AIDS.

Young women and girls are especially vulnerable to STIs for several reasons. The single-layer columnar epithelium layer on the cervix is progressively replaced during puberty by multi-layer squamos cells, which are less susceptible to infection by virus and bacteria. STIs are transmitted more efficiently from males to females because of the larger surface area of the genital tract in females. The presence of many reproductive tract infections (RTIs) is often asymptomatic in women and are therefore unnoticed and untreated (Futterman, 2004). Further, young girls are less likely to recognize
the difference between pathological and physiological discharge: self-reported vaginal discharge was only slightly less common among girls who were not sexually experienced in a study among Nigerian schoolgirls (Brabin, 2000; Ikimalo et al., 1999). Even if the girl has symptoms she can be reluctant (more than an adult woman in the same situation) to seek care due to fear of being treated in an unfriendly way by health workers or because of poverty.

Syndromic management of sexually transmitted infections

Few health facilities in developing countries have the laboratory equipment and resources required for etiological diagnosis of different STIs. Therefore, the guidelines that have been developed by the World Health Organization (WHO) 1991 to identify and treat people with signs and symptoms of an STI "syndromically", are used (WHO, 1991). There are four STI syndromes commonly used: AVD, low abdominal pain, genital ulcer disease (GUD) and urethral discharge syndrome. One or more of these symptoms serves as the entry point to a flow-chart for STI treatment. The health workers use the flow-chart for the different STI syndromes to diagnose and decide on treatment and follow up. This approach is simple to use and works well for the management of urethral discharge syndrome in men (Pettifor et al., 2000) and GUD in men (Htun et al., 1998; Pettifor et al., 2000). The objectives of syndromic management of STIs are to relieve symptoms, to treat all infections effectively, to avoid unnecessary treatment and to prevent negative consequences of the infections (Behets et al., 2001).

This approach appears straightforward, but on closer inspection, the objectives may be mutually conflicting. The AVD syndrome algorithm has proved to be problematic, because the infections that the algorithm is supposed to manage are often symptom-free (Fonck et al., 2000a; Kapiga et al., 1998; Paxton et al., 1998; Thomas et al., 1996; Tyndall et al., 1999). In a large study in rural Uganda, the estimated proportion of STIs that became symptomatic were 11% for males with CT, 45% for males with NG, only 6% for females with CT and 14% for females with NG (Korenromp et al., 2002). Flow-charts with AVD as an entry point will not identify a large number of patients with cervical infection.

Over-treatment is another problem because not all women who present with a vaginal discharge have an infection that needs antibiotic treatment (Blankhart et al., 1999). In order to improve the specificity of the AVD algorithm, WHO in 1994 developed a risk assessment approach, to identify cer-
vical infection among women complaining of vaginal discharge (WHO, 1994). Five simple questions comprise the risk score:
1. Are you less than 21 years?
2. Are you single?
3. Have you had a new sexual partner within the past 3 months?
4. Have you had more than one sexual partner in the past 3 months?
5. Has your partner experienced a urethral discharge and/or dysuria within the past month?

If the answer is "yes" to at least two of the first 4 questions, or if the answer is "yes" to the last question, the woman is considered at high-risk of having a cervical infection and is treated according to the national recommendations. The WHO algorithm with risk assessment was evaluated in two populations of symptomatic women in Tanzania (Mayaud et al., 1998). Over-treatment of CT and NG was reduced, compared to the syndromic approach without risk scores, but even so, the algorithm failed to identify 38% of non-pregnant women and 54% of pregnant women with these infections.

Researchers have tried to improve the syndromic approach by adding risk scores and simple clinical signs (Mayaud et al., 1995). In Gabon (Bourgeois et al., 1998), pregnant women were screened for cervical infection and assigned risk scores according to marital status, age and the presence of a coloured discharge. They were divided into high-risk, intermediate risk and low-risk groups. The intermediate risk group were further investigated with speculum examination and microscopy and the high-risk group were treated for CT and NG. This approach improved sensitivity and specificity for predicting cervical infection. In Malawi (Costello Daly et al., 1998), a study showed that a risk score combined with external genital and bimanual examination improved the performance of the flow-chart. For women with a very high STI prevalence (female sex workers in Ghana) the combination of clinical signs and a search for diplococci on cervical smears improved sensitivity and specificity (Deceuninck et al., 2000). In Brazil (Moherdau et al., 1998), the syndromic approach with an included risk score performed better than diagnosis based on clinical signs. Although these authors claim that the syndromic approach, with additional risk scores or clinical signs or simple tests added are acceptable, others (Bogaerts et al., 1999) claim that any model based on reported symptoms should be avoided as long as the significance of these symptoms is not understood.

The negative consequences of missing a cervical infection are obvious, with risk of sequele and transmission of the infection to others. There are also negative implications of unnecessary treatment (false positives). These are:

- Possibility of change in vaginal, oral and bowel flora that may induce vulvovaginal candidiasis and increase vulnerability to HIV and other STIs
• Contribution to anti-microbial resistance
• Adverse drug effects
• May cause couple and social problems
• May undermine the credibility and confidence in providers and the health care system, especially in mutually monogamous couples
• Cost of treatment

All adolescents are less than 21 years and are often single. Young girls are also inexperienced in distinguishing a normal from an AVD. The flow-chart, as described above, is not adapted to identify infections among adolescents. In Paper II the performance of the WHO flow-chart for management of abnormal discharge in women was evaluated, with and without added risk scores, in a population of adolescent girls.

It has been claimed that risk factors capturing recent sexual risk behaviour, because they can change, can be expected to be more useful as screening components than static indicators such as age for sexual debut (Behets et al., 2001). Different theoretical models based on behavioural factors that correlated to STI risk were constructed and tested for the management of cervical infection in adolescent girls (Paper II).

Diagnostic methods

Neisseria gonorrhoea

Culturing on selective media has been the “gold standard” for diagnosing NG. During optimal conditions a sensitivity of 80-95% can be achieved (Martin et al., 2000). The technique requires invasively collected endocervical or urethral swabs, a suitable transport media and a short transportation time (Fredlund et al., 2004). Gram staining and identification of diplococci has a sensitivity of 45-65% and specificity of 90-95% in endocervical specimens, but requires microscope and technical expertise (Mabey, 2002).

New technology based on the detection of specific nucleic acid sequences in clinical specimens, has been developed. Diagnostic assays based on PCR or ligase chain reaction (LCR) can detect CT, NG and many other microorganisms in urine and other body fluids (Buimer et al., 1996). In a multicentre study in the US (Martin et al., 2000) with a prevalence of NG in 6.6% in women, a sensitivity of 92.4% was achieved with COBAS AMPLICOR CT/NG from endocervical swab specimens, but only 64.8% from female urine specimens. There was no significant difference between symptomatic and asymptomatic women. The specificity was 99.5% for endocervical swab and 99.8% for urine specimens. Others (Buimer et al., 1996) have reported high sensitivity and specificity for LCR on specimens of endocervical swabs.
compared to culture, for both CT and NG. There are some concerns about the specificity for deoxyribonucleic acid (DNA)-based diagnosis of NG. Related Neisseria strains have caused false positive results with the AMPLICOR NG PCR (Farrell, 1999; Van Der Pol et al., 2001). This problem is especially relevant for low prevalence populations (<4%) and extra genital specimens, in particular pharyngeal specimens as this site often harbours commensal Neisseria (Palmer et al., 2003). Nonetheless, a specificity of at least 96% could be accepted if the alternative is culturing with comparably low sensitivity. One advantage with the DNA-based method is that non-invasive specimen-collection methods, such as self-collected vaginal introitus swabs or tampons can be used (WHO, 1999).

Less sensitive tests have been developed that can be used at the point of care but are not widely evaluated. These tests are based on immunochromatography, with antigen-antibody reactions that are trapped on a strip: the result appears within minutes as coloured lines or dots. Sensitivity in such tests is 50-70% and specificity 98-99% (Fredlund et al., 2004; Mabey, 2002; WHO, 1999).

Chlamydia trachomatis
The conventional method for the diagnosis of CT has been inoculation of a cell culture with a genitally collected specimen. This is expensive and labour-intensive and requires accurate sampling and meticulous handling during transport (WHO, 1999).

In low-resource settings, it is often difficult to perform endocervical sampling: therefore, a DNA-based non-invasive technique is an advantage. A specimen collected from the vagina has the same sensitivity as a sample collected from endo-cervix (Schachter et al., 2003; Witkin et al., 1996). The main obstacle to the clinical use of the method is still the high cost.

Several enzyme immunoassays are now available on the market, which are simple to handle. Specificity is at least 95% but sensitivity is rather low (52-85%), and the assays are expensive (WHO, 1999).

Trichomonas vaginalis
TV can be asymptomatic in 10-50% of women. TV infection causes vaginitis and is a marker of high-risk sexual behaviour. Whether it is a risk factor for HIV transmission is still unclear (Laga et al., 1993; Madico et al., 1998). Traditionally diagnosis has been clinical or by using a wet preparation with 35-80% sensitivity.
DNA detection with PCR is the most sensitive (93%) and specific (96%) method available but is expensive and requires laboratory expertise (WHO, 1999).

**Treponema pallidum**

Primary and secondary lesions of syphilis can be detected by dark-field microscopy, but the method requires extensive training and that live treponemes are present: sensitivity is 74-86% and specificity 97-100% (WHO, 1999).

Non-treponemal antibody tests are used for screening purposes. The rapid plasma reagin (RPR) test is the most commonly used: the antigen mixes with charcoal so that the antigen-antibody complex can be seen without a microscope. The Veneral Disease Research Laboratory (VDRL) slide test is read microscopically. A positive test with any of these methods should be confirmed with a specific treponemal antibody test such as Treponema Pallidum Hem Agglutinins (TPHA) test. RPR has a sensitivity of 72-100% and specificity of 93-98% (WHO, 1999).

A multiplex-PCR for simultaneous detection of syphilis, herpes simplex virus and haemophilus ducreyi DNA has been developed (Orle et al., 1996). Sensitivity is 91% and specificity is 99% for syphilis diagnosis, however the method is complex and expensive (WHO, 1999).

**HIV**

HIV infection can usually be diagnosed, except in early infection before sero-conversion occurs, with an assay that is based on the detection of HIV specific IgG antibodies. Most HIV antibody screening tests detect both HIV-1 and HIV-2: the sensitivity is 100% and specificity 99-100% with these assays (WHO, 1999). However, in clinical praxis it is recommended to use another type of assay to confirm the result: this can be a Western blot assay where a viral lysate is separated by gel-electrophoresis and transferred to a nitrocellulose strip, where antibodies to different HIV antigens can be detected. In developing countries, it is more common that a combination of two or three less expensive assays are used for confirmation of HIV positive samples (Andersson, 1999). HIV-1 DNA can be detected in whole blood with a PCR assay. This technique is used for diagnosing perinatal infection but is expensive and time consuming (WHO, 1999).
The ABC message as a strategy for preventing sexually transmitted infections

In the efforts to combat HIV and STIs in Uganda, the AIDS Control Programme of the MOH launched the ABC strategy where A means Abstinence, B means Being faithful (monogamy) and C means Condom use (Mukaire, 2004). The extent to which each factor contributes to the decline in HIV rates is debated.

Abstinence from sex

According to data obtained from the Uganda Demographic and Health Surveys in 1988 (UBOS, 1988), 1995 (UBOS, 1996) and 2000 (UBOS, 2001), there has been an increased delay in initiation of sexual activity. Conversely, these surveys show that adolescents and young adults who have sexual intercourse are increasingly likely to be unmarried and to have multiple sexual partners (Singh et al., 2004). These trends can possibly counteract the effects of later onset of sexual intercourse. The abstinence-only-until-marriage approach has appeal, as it is unambiguous safe and 100% effective. Nevertheless, this only applies on an individual level and as a public health intervention, the abstinence-only approach may have disadvantages (Fortenberry, 2005). There is always a failure rate and the consequences of this are yet not well studied. In the United States, social conservatives, in and out of government, have taken the opportunity to promote A for all unmarried people. Even so, there is no evidence that abstinence-only programs are more efficient than the wider approach (Cohen, 2004; Singh et al., 2004).

The effectiveness of virginity pledging in reducing STI rates among young adults has been studied by Bruckner et al 2005 (Bruckner & Bearman, 2005), in the United States. Virginity pledging means that you make an official promise to not have intercourse before marriage. According to these authors, the STI rate was not reduced at follow up among those pledging virginity, although they had postponed first sexual intercourse, had fewer partners and lower levels of non-monogamous partners. The authors conclude that most of the virginity pledgers have sex before marriage and that they are less likely to use condoms and also less likely to be tested and diagnosed for STIs, probably because they did not recognize symptoms or were ashamed to seek help. As most adolescents eventually become sexually active, the authors question the wisdom of banning discussions on contraception and STI protection from sex education, as suggested by those favouring the abstinence-only approach. One randomised controlled trial (Jemmott et al., 1998) has shown that both abstinence and safer-sex inventions can reduce sexual risk behaviours. The safer-sex intervention appears more effec-
tive, particularly with those who are already sexually experienced. It also appears to have a longer-lasting effect than the abstinence-only intervention.

Be faithful to your partner

It has been argued (Halperin & Epstein, 2004) that the high rates of HIV in east and southern Africa are caused by a different pattern of sexual behaviour compared to Asia and Europe. In spite of roughly similar, if not fewer numbers of lifetime partners, African men and women often have more than one concurrent partner and these relationships can overlap for months or years. This has an implication for the spread of HIV. During the first weeks or months after infection, the viral load is high and, as soon as one person in a sexual network is infected, everyone else in that network is at risk. In serial monogamy, the infection is “trapped” within a single relationship for months or years.

In a recent Ugandan survey on knowledge and practices related to HIV/AIDS in 19 districts in Uganda (Mukaire, 2004), 9% of women aged 15-49 and 24% of men 15-54 years old reported having at least one non-regular sexual partner in the last 12 months.

Use condoms

In the United States the scientific evidence on the effectiveness of condoms in preventing STIs has been reviewed (Holmes et al., 2004). Prospective studies, published in the last five years show that condom use is associated with a statistically significant reduction in infections with CT, NG, herpes simplex virus type 2 and syphilis. Although condoms are not 100% effective, the authors conclude that partial protection can substantially reduce the spread of STIs within populations.

The Uganda Demographic and Health Survey 2000-2001 demonstrates a steep increase in the use of condoms among the unmarried, sexually active population. Among married women though, there has been little change in the reported rate of condom use. Further, a substantial proportion of married men are not monogamous and do not use condoms, especially not with their spouses (UBOS, 2001). This means that many married women are at greater risk of infection compared to unmarried women, as it is more difficult for them to refuse unprotected sex. Focus-group discussions (FGDs) and an interview survey in two rural districts in Uganda confirmed that barriers to discussing condom use are especially high for married women (Blanc & Wolff, 2001). Condom use among people living with HIV/AIDS has been investigated in a study in 19 districts in Uganda and 67% of women and 33%
of men who knew that they were HIV infected said that they use a condom every time they have sex (Mukaire, 2004).

In 2004, a large stock of condoms was quarantined in Uganda after failing the freedom-from-holes and the smell tests. This caused not only a shortage of condoms and an increase in the price but also severe problem for the authorities in restoring public faith in condoms (Bass, 2005).

Apart from the ABC strategy, another factor likely to have influenced the HIV prevalence in Uganda, is the strong governmental commitment to involve the whole population in the fight against HIV, campaigns to reduce stigma, and promotion of voluntary counselling and testing (VCT) for HIV for individuals and couples (Kirungi, 2001).

HIV and AIDS in Uganda

In 1982, a “new” disease was seen in Uganda. It was called Slim, as people who had it became very thin before they eventually died. When the political situation stabilized after 1986, it was obvious that this disease, now known as AIDS, was a severe problem to the country and the Minister of Health appealed to the World Health Assembly for support. The president, Yoweri Museveni, became personally involved after receiving a telephone call from the Cuban president, Fidel Castro: out of 60 Ugandan soldiers training in Cuba, 18 had tested positive for HIV, some of these soldiers were personal friends of the president from the years in the “bush”. An AIDS control programme was established in collaboration with the WHO. The president travelled to all districts of Uganda and explained the facts about AIDS and tried to dispel all the myths (Dyer, 2003).

The AIDS Support Organisation (TASO) was founded in 1987 by Noerine Kaleeba, a woman who had lost her husband due to AIDS (Kaleeba, 2002). The intention was to break the silence and the stigma about AIDS. Many of the members of TASO were HIV infected people and others were relatives and friends to AIDS victims. Noerine Kaleeba describes her motives for “coming out in the open” about HIV and AIDS:

“I was increasingly convinced that AIDS was a disease that thrives in secrecy. It was prospering because people were choosing not to talk about it. It was this reaction that provoked me to go wider, beyond my personal circle, beyond the people I worked with. The quieter we keep it the more people it will affect and stigmatise, especially while people believe that AIDS affects some people and not others. I reasoned that if people could see how it affected us, an ordinary average family…. they would understand the importance of coming out. If it could happen to us, it could happen to anybody.”
According to preliminary data from the latest HIV prevalence survey in Uganda 2004-2005, 7% of Ugandan adults aged 15-49 years are infected with HIV (MOH, 2005). The overall rate for women is 8% and for men 6%. The prevalence peaks for women aged 30-34 and at a slightly higher age for men, 35-39 years old. The HIV prevalence is lower among men of all ages except 50-59 years. HIV infection rates are much higher in urban than in rural areas and infection rates vary in different parts of Uganda. The highest infection rates are found in Kampala, the capital city, and in the Central and North-Central region whereas the lowest rate is found in Northwest. There has been some controversy over whether the Ugandan success story with declining HIV prevalence is true or not (Parkhurst, 2002). Although there is growing evidence that incidence of HIV in Uganda is declining, it has been claimed that conclusions can be biased if one looks at the un-weighted overall rate at available sites. A factor that could contribute to declining HIV prevalence is the rate of premature death among HIV positive people. In a study in Rakai district, south-western Uganda, the number of HIV positive people who died outnumbered the newly infected people by 70%/year (Wawer et al., 1997). Even so, HIV prevalence rates have dropped in urban antenatal care sentinel sites from around 25% in 1989-1990 to less than 7% in the most recent survey (MOH, 2005), the first nationally representative, population-based HIV serological survey to be carried out in Uganda.

Voluntary counselling and testing for HIV

VCT for HIV is important in reducing sexual risk behaviour (Muller et al., 1992; Painter, 2001). Weinhardt, et al reviewed 27 published papers where sexual behaviour was compared before and after testing (Weinhardt et al., 1999). Among HIV positive individuals, a reduction in sexual risk-taking was reported. A similar behaviour change was not seen among HIV negative individuals. In fact, HIV negative individuals did not significantly change behaviour, compared to those who were untested. The Voluntary HIV-1 Counselling and Testing Efficacy Study in Kenya, Tanzania and Trinidad (Coates et al., 2000) showed similar results with the effect mainly in secondary prevention. The influence of VCT on peoples’ behaviour was investigated in rural Uganda in 1993: participants in a VCT program did not display any differences in condom use and number of casual partners after three months when compared to non-participants (Kipp et al., 2001). A more recent study from Rural Uganda shows the same lack of change in risk behaviour after VCT for HIV (Matovu et al., 2005).

Acceptability of VCT for HIV in developing countries has been studied in pregnant women (Cartoux et al., 1998; de Paoli et al., 2004; Pool et al., 2001) and in different populations of adults (Fylkesnes & Siziya, 2004; Ma-
Pregnant women generally have positive attitudes towards VCT for HIV, especially if they see clear benefits such as prevention of mother-to-child transmission (de Paoli et al., 2004). The obstacles to VCT are fear of rejection by spouses and domestic violence as well as fear to be mistreated or even killed by maternity staff (Pool et al., 2001). For adults, important predictors of testing are costs, physical availability and the link of VCT to treatment opportunities. VCT is often out of reach for youths and women. Young people are especially vulnerable and may feel reluctant to go for HIV testing (Nuwaha et al., 2002).

In prosperous countries, where anti retroviral (ARV) drugs are available, youths with an increased risk of infection are more likely to be tested for HIV (Main et al., 1994; Samet et al., 1997). Similarly, a study on HIV testing behaviour among Canadians indicated that those at risk are more likely to be tested (Houston et al., 1998). However, males attending an sexually transmitted disease (STD) clinic in New Mexico in 1986 were more likely to be HIV infected if they had refused HIV testing (Hull et al., 1988). Blood samples drawn for syphilis were screened retrospectively for HIV antibodies. This was before ARV drugs were available. The situation in Uganda is changing rapidly in this aspect (MOH, 2003a). Today, ARV drugs are supposed to be prescribed to all patients with AIDS symptoms or with low CD4 lymphocyte count, an indicator of progressing disease, without any cost for the patient.

Young people have a need for adequate information and appropriate counselling so that they can make informed choices about their sexuality and reproductive health. A study in Zimbabwe (Kim et al., 1997) revealed that young people are less likely to ask questions about these issues without prompting, appear more embarrassed and shy to talk about sexual matters, and they have concerns about privacy and confidentiality in the counselling situation. Many providers believe that parents should be notified if young unmarried clients had reproductive health problems. This attitude towards adolescents could make young people reluctant to seek advice at healthcare facilities. There is a lack of qualitative information about young peoples’ attitudes to VCT for HIV in East Africa (Amuyunzu-Myamongo et al., 2005), although these studies would add useful knowledge for program development.
Young people and HIV testing: an interview with youth counsellors at AIDS information centre

In Paper IV, the views of young people on HIV/AIDS and VCT for HIV was investigated and described: as a complement to these findings, a group interview was undertaken with three of the youth counsellors at AIDS Information Centre (AIC) in Kampala, an NGO with the objective to provide VCT for HIV. This centre is located close to the Muvubuka Youth centre and VCT is provided at a low fee for young people in a separate area and by specially trained youth counsellors.

Counselling was a pre-requisite to HIV testing. Informed consent was mandatory and the result of the test was given the same day. The themes discussed were the meaning of “counselling”, the difference between counselling adolescents and adults, gender differences in the counselling situation, and situations when the counsellor advises against testing. Counselling is a dialogue aimed at helping the client to either cope with or to overcome a problem. The following differences in counselling youths compared to adults were identified. Young people need more time and it is more important to be friendly and understanding. They are less likely to tell the full story about how they have been exposed to the virus. Their problems are different: adults may have solutions to their problems whereas young people feel more helpless and hopeless and it is difficult for them to accept that they are infected as they may fear the reactions of the people who are supposed to help them, usually parents or guardians. Some youths fear that their parents will break down if they reveal they are HIV infected. A common reaction is that parents find it useless to spend money on someone who is going to die and will stop paying school fees. Disclosure of positive HIV status is generally more difficult for the youth and some even end their education because they fear that teachers and friends will get to know about their infection. This is especially a problem at campus and boarding schools, where roommates notice if someone is taking medicines. The informants did not recognise any significant differences between adolescent females or males in these aspects.

Referral to other levels of care is problematic, as other institutions are not youth friendly and lack the confidentiality that is required.

The most important thing about HIV counselling is to be encouraging and to give hope as described in the following quotation:

“We need to emphasize that being positive doesn’t mean you are useless, it’s not her fault that she is infected, and even then she is a human being who deserves all the rights that all the other children are having. And besides, people are living with an infection, and there are many things that can be done to
help this girl live longer. And we don’t know what is about to come. Maybe other options are coming. You talk to them with a hope. You give them hope."

There are situations where the counsellor advises against a HIV test. These include: when a young person is brought in for testing by someone else and has not participated in the decision to have a test and when the youth is very sick. In these instances, it is considered more important to start treatment than to HIV test.

The counsellors at AIC emphasized that lack of time and space make it difficult to fulfil their ambitions to do a good job. They suggested that they should be educated in child counselling, as many of these adolescents actually are children.

Gender perspective on sexually transmitted infections

Gender is a term used to describe the societal roles prescribed for either the female or the male sex.

Two different themes pervade the literature on adolescent girls and their risk of acquiring AIDS. First, the vulnerable position of girls in relation to men, particularly older men: the “sugar daddies”. These are men with money who tempt girls with gifts if they perceive the girls as “AIDS free” (Nyanzi & Nyanzi-Wakholi, 2004; Silberschmidt & Rasch, 2001). Women and girls sell sex for survival because of few other opportunities to earn their living, but more often because it is considered a normal aspect of sexual relationship. According to findings in a study in south-western Uganda (Nyanzi et al., 2001), a girl who is not interested in money can even be suspected of being infected and wanting to spread HIV. Second, the break up of tradition is believed to have increased promiscuity in youth and young women find it difficult to cope with “modernity” (Wimberley, 1996). Sex education used to be given by the paternal aunt: the senga. Chastity and virginity were valued and sanctioned by society (Muyinda et al., 2003).

Gender inequality is prominent in the Ugandan society, although Uganda has more women in political decision-making positions than most developing countries: women hold 24% parliamentary seats (UNFPA, 2005). Traditionally, Ugandan women have a lower social position than men and a subordinate role in the family: they are expected to be submissive to sex, faithful to men and must tolerate polygamous marriages. The man is the head of the family and is the one who makes decisions about health seeking and other important issues. Many women, especially in rural areas, are illiterate and
this restricts their access to information. Women’s inferior socio-economic position and inability to earn or control income increases the possibility of commercial sex work as a survival strategy (Ebanyat, 1999).

The tension between the traditional ideal of female chastity and submissiveness and the modern image of sexual freedom was studied in south-western Uganda (Nyanzi et al., 2001). Money is reported to be an indicator of sexual interest on the boy’s part and they are supposed to be sexually experienced. The girls do not want to appear as “unsophisticated virgins” and have to balance this with not being “loose”. According to the girls, there must be some form of material gain, preferably monetary, in a sexual relationship, as they are rarely allowed by parents to seek employed labour which leaves them with no other option to satisfy their material needs than to accept gifts in exchange for sex (Nyanzi et al., 2001).

Qualitative research

Qualitative research methods are usually described by how they differ from quantitative methods. Qualitative researchers, although they can use a wide range of methodologies, share four basic assumptions. The first is the assumption that realities are subjective, multiple and socially constructed. Second, that there is an interaction between researcher and informants. Third, research is value-bound and pre-understanding, expectations and biases of the researcher must be openly debated: the researcher is to some extent influenced by prior knowledge of the phenomenon under study. Finally, that the research is inductive, at least at the onset, which means that instead of testing a hypothesis, the collected data can be used to construct a new hypothesis (as in Grounded Theory (Strauss, 1990)) or to understand and describe the reality of the informants. Later in the research process, an emerging hypothesis can be tested against data (Dahlgren et al., 2004). Creswell provides another definition of qualitative research:

“Qualitative research is an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting.” (p15) (Creswell, 1998).

The process of sample selection is different in qualitative compared to quantitative research. Creswell (Creswell, 1998) describes a range of different sampling strategies for qualitative studies. Often the term “purposeful sampling” is used. That is, people who have something to say about the topic that you are studying are chosen for interview.
In this thesis, individual interviews and FGDs were used for the qualitative data collection. In individual interviews or qualitative research interviews, open-ended questions are asked and often a pre-designed and pre-tested question guide is used to avoid losing focus during the interview. The questions should encourage the informants to speak in their own words. With follow-up questions, the researcher can clarify and expand on what has been said. Qualitative interviews can provide deeper insights into the lived world of informants, provided that the interviewer has the necessary skills and empathy (Dahlgren et al., 2004; Kvale, 1996).

FGDs are a relatively inexpensive and flexible method for qualitative data collection, with advantages as well as disadvantages. It is an efficient data collecting technique as data is collected from several people at the same time. Natural quality controls on data operate, as participants tend to provide checks and balances on each other. Group dynamics help in focusing on the more important topics and the extent of shared views is usually easy to assess. Participants tend to enjoy the experience in a natural and relaxed setting and are often stimulated by the thoughts and comments in the group, so that even those who are normally reluctant and shy tend to say what they think. People who cannot read or write are not discriminated against and the moderator can seek clarification when a topic is unclear (Kitzinger, 1995).

One disadvantage with FGDs is that confidentiality can be a problem and mediating a group requires considerably expertise. Usually one or two participants in a group tend to dominate the discussion and it is a difficult task for the moderator to balance the discussion without interrupting so that all participants have the opportunity to talk (Robinson, 1999).
Aims

Overall aims
To expand the knowledge and understanding about sexual and reproductive health, especially for STIs and HIV among urban Ugandan youth.

Specific aims
- To find out how young people in a Kampala suburb perceive recommendations about safe sexual behaviour (Paper I)
- To describe the prevalence of the most common, treatable STIs among sexually experienced adolescents, boys and girls (Paper II)
- To evaluate how accurate the diagnosis made by health workers trying to apply the original WHO syndromic approach to STIs (1991) in a clinical situation is (Paper II)
- To describe the prevalence of HIV and the social and behavioural factors influencing the risk of contracting STIs including HIV (Paper III)
- To compare social and behavioural characteristics between females and males (Paper III)
- To comprehend and describe the perception of HIV/AIDS and attitudes to VCT for HIV among young people in Kampala, Uganda (Paper IV)
Subjects and Methods

An overview of the studies is presented in Table 2.

Table 2. Study design, data sources and participants in the studies

<table>
<thead>
<tr>
<th>Paper</th>
<th>Study design</th>
<th>Data sources</th>
<th>Study groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Qualitative, descriptive</td>
<td>Individual interviews</td>
<td>20 youth, 6 males and 14 females, visitors to a youth health clinic in a suburb of Kampala</td>
</tr>
<tr>
<td>II</td>
<td>Quantitative, descriptive</td>
<td>Clinical investigation, microbiological analyses and questionnaires</td>
<td>199 female and 107 male consecutive visitors to a youth health clinic in an urban slum area</td>
</tr>
<tr>
<td>III</td>
<td>Quantitative and qualitative, descriptive</td>
<td>The same as for Paper II plus FGDs</td>
<td>Same as in Paper II and four focus-groups: one with staff, one with females, one with males and one mixed group with both females and males</td>
</tr>
<tr>
<td>IV</td>
<td>Qualitative descriptive</td>
<td>Individual interviews and FGDs</td>
<td>22 interviews with youths aged 15 to 22 years and 5 FGDs, three with females and two with males, all in an urban slum area in Kampala, Uganda</td>
</tr>
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Study setting

Kampala is the capital of Uganda. The city population is growing at a rate of 3.9% per annum and was 1.2 million at the 2002 census (UBOS, 2001).

The first study (Paper I) took place in 2000 in Kiswa Clinic, which is located in a Kampala suburb and is a health centre run by Kampala City Council. Since 1999, the clinic has offered health services for young people. There
has been no separate funding for the youth service, which means that the youths have to pay for any medicines or laboratory tests needed. Most visitors to the youth clinic present with problems related to reproductive health. HIV testing with pre- and post-testing counselling is available at the clinic at a cost of US $2/test. Approximately 50% of the visitors have migrated to Kampala from other parts of Uganda and therefore have different languages as their mother tongue. The majority of youth clinic visitors are literate in English.

The second study (Paper II and III) was conducted in 2002 in Kisenyi, a slum area in Kampala. Kisenyi has a youth centre called Muvubuka Agunjuse Reproductive Health and Service Provision Centre and is run by the MOH of Buganda Kingdom. Services aimed at improving reproductive health standards are provided to young people aged 10-24 years. Medical treatment, counselling and contraception advice are offered by a nurse/midwife and a social worker. Within the centre, peer communicators organise youth clubs with a variety of activities such as music, games, drama and discussion groups.

When it started in 1997, the Muvubuka Agunjuse Centre was funded by UNFPA. After the first year, there has been little or no governmental or NGO funding for the health care at the clinic. The nurse/midwife, the social worker and the peer communicators are all on a voluntary basis. When drugs are available, these are provided free, but the clinic has no resources for laboratory tests. This situation is similar to that in other youth clinics in the Kampala area. Many visitors come because they have symptoms that they believe are caused by STI or are afraid to be infected: others come for counselling on menstruation-related or social problems.

The third study (Paper IV) was partly conducted in the Muvubuka Agunjuse Youth Centre and partly in the surrounding parish, Kisenyi. The area surrounding the clinic is a densely populated slum with market places, bars and small industries for metal recycling etc. It has a substantial immigrant population such as Somalis and Ethiopians and intermarriages are common. In Kisenyi, many youths have come from rural villages to live with relatives or to look for employment: very few live with both parents. Some research participants came from other parts of Kampala.
Methods

Paper I

Twenty visitors to Kiswa Health Centre, 14 women and 6 men, were informed about the study and asked to participate. The youngest participant was 16 years and the oldest 23. Mean age among the women was 19.5 years and among the men 18.0 years: they could all understand and express themselves in English.

The informants were selected through purposeful sampling with the aim of acquiring information from people with different social backgrounds, and representing different experiences such as being an orphan, teenage mother, student, out of school, unemployed etc. They were recruited among young people who came to the Kiswa Youth clinic for different reasons: some presented with health problems, some came for family planning advice and some had been told about the study by one of the peer communicators connected to the clinic. The participants were informed that they could choose to abstain from participating but still receive the service or information they had come for. All participants gave verbal informed consent to be interviewed. They were informed that a tape recorder would be used. All the interviews were held in English in a private room at Kiswa Clinic. The purpose of the interviews was explained to the participants, and that opinions and experiences were important, not getting the “right” answers. Participants were encouraged to feel free to share their views with the interviewer. A semi-structured interview method was used (Malterud, 1998) and the time for each interview varied from 15 to 45 minutes. The interviewer (E-B R) had worked with the youth clinic in Kiswa since inception in 1999. If the informant had come for treatment or examination at the clinic, this was done before the interview by the local staff, not by the interviewer although sometimes health advice was given by the interviewer after finishing the interview.

The three strategies for avoiding STDs and unwanted pregnancy, abstaining from sex, condom use and reducing number of sexual partners, were presented to the informants as an introduction: “In health education young people are usually advised to abstain from sex (or to use condoms, to stay with one partner). What is your opinion about this advice?” In most interviews, the issue of HIV testing was also discussed.

Analysis of interviews

The interviewer transcribed the interview after each session. The text was searched for meaning units and interpreted to determine themes. Discussions of similar recurrent and important themes were assembled and compared and
their relationship to other statements within the data material was examined. Findings relevant to the research; perceptions about sexual health behaviour and HIV testing are presented in Paper I.

Papers II and III

**Questionnaire preparation**

A questionnaire, with the aim of gaining information about social background, sexual experience and genital symptoms among adolescents, was pre-tested in Kiswa clinic. In order to determine which method was most feasible, questions were presented as both self-administered questionnaires and as structured face-to-face interviews. The later method was found to be more advantageous as many participants found it rather difficult and tiresome to read and comprehend the questions. After readjustment of the questionnaire, all questions were translated into Luganda. The interviewers had access to both the English and Luganda versions of the questionnaire. The questionnaire was retested and readjusted during the process of interviewer training, just before the study commenced.

**Recruitment of research participants**

Consecutive visitors to the youth clinic at the Muvubuka Agunjuse Centre were given written and oral information about the study, which was conducted from May to August 2002. Those who fulfilled the inclusion criteria: adolescent (below 20 years of age) and sexually experienced, were invited to participate in the study irrespective of the reason they had to come to the clinic. All participants, except two of the 199 females and 107 males in the prevalence study, were adolescents. The age range was 14-20 years. The mean age was 17.8 years for females and 18.2 years for males. The intended number of participants was 300, but due to lack of resources, the number of participating boys was limited to around 100, in order to be able to include as many girls as possible.

**Research procedures**

A midwife first saw the participants. She indicated in a pre-designed protocol if the patient had an STD syndrome, and which syndrome, and what treatment was suggested. The midwife did not perform any speculum examination, as this was not the current practice.

The patients were then seen by a medical officer, who did an independent evaluation, with a similar study protocol as the midwife. The medical officer’s protocol also contained results from a physical examination. The instruction to the midwife and the medical officer was to use their clinical judgment and their knowledge about the syndromic approach and suggest a
treatment they would have given if this were not a study situation. The medical officer also did the vaginal sampling: a high vaginal Dacron swab for PCR analysis. This gave the medical officer the opportunity to see the vulva and lower part of vagina of all the girls. In selected cases, i.e. if the medical officer suspected PID and if the girl accepted it, a speculum examination and bimanual palpation was done. The boys were asked for a first catch urine sample and in most cases the medical officer was allowed to inspect the genitals of the boys and to note if there were signs of urethral discharge or genital ulcerations. A laboratory technician collected a blood sample for RPR/TPHA from all participants.

Finally, a counsellor, or one of the peer communicators, presented the structured questionnaire in a face-to-face interview. Genital symptoms were defined as AVD, spotting, bleeding after intercourse or pain during intercourse, itching, bad smell from the vagina and genital sores. The language used was English or Luganda.

All samples and protocols were collected and transported on a daily basis to the STD clinic at Mulago Hospital.

**Treatment and follow up**

The patients were treated according to findings by the medical officer, without waiting for results from the STD clinic. All participants were asked to come back within the next two weeks for their laboratory results on CT, NG, TV and syphilis. Based on the laboratory findings, treatment was offered at the follow-up visit within two weeks of testing, and partners to those who were infected were encouraged to come for treatment.

**Focus-group discussions**

Shortly after the study, four FGDs were held in order to complement and validate the survey results and their interpretation. The four groups were staff at the clinic (6 participants), participants in the study: two separate groups of 3 girls and 10 boys, and one mixed group of 7 young people who had not participated in the study.

The discussions were lead by two of the authors and the nurse at the youth clinic. Aspects on socio-demographic conditions, sexual experiences and habits, as revealed in the STI prevalence study questionnaires, were discussed.

**Laboratory methods**

The samples, vaginal swabs, urine and blood were analysed at the reference STD laboratory at Mulago University Hospital. CT, NG and TV were detected with PCR, a DNA-based test. CT and NG detection was carried out in
accordance to the manufacturer’s instructions (Roche, 1999). The PCR method for detection of TV was developed at The Chlamydia Laboratory of Indiana University Hospital, Indianapolis, USA. The RPR test for evaluation of syphilis status was performed according to manufacturer’s instructions of the kit insert (SyphSreen-RPR kit, Code FRPR500, Shield Diagnostics, Dundee, UK). A confirmatory TPHA test was performed on all RPR positive samples. Syphilis infection was defined as a reactive RPR confirmed by TPHA and the assay was carried out following manufacturer’s kit insert, (New Market Laboratories Ltd, Kennett, Suffolk, CB 8 7PN, UK.). One year after finishing the STI prevalence study, 300 blood samples, originally collected for syphilis diagnosis were analysed for HIV antibodies. Serum was analysed for HIV antibodies 1 and 2 with Determine HIV-1/2 (Abbott) following the manufacturers instructions.

**Statistical analysis**

The statistical package SPSS 11.0 for Windows was used. Data analysis started with descriptive statistics of the sample, followed by prevalence of STI types including HIV infection and syndromes, bivariate analysis of background or risk factors and outcome variables. The principal outcome, cervical infection, was defined as the presence of NG or CT or both. The bivariate analysis involved 2 x 2 tables with the outcome variables cervical infection or having a positive laboratory result for any of the STI tests. A chi-square analysis tested the significance of the results. Alternative flow-charts built on risk factors were constructed. Sensitivity, specificity, positive predictive value (PPV), odds ratio (OR) and confidence interval (CI) were calculated on the ability of each flow-chart to differentiate between infected and uninfected cases.

The significance of differences between females and males, including social background factors, reported genital symptoms, and sexual practices and experiences were tested with Fisher’s exact and Mann-Whitney’s U tests.

**Analysis of focus-group discussions**

The discussions were tape recorded and transcribed verbatim by the first author. The material was searched for meaning units, and the units condensed and sorted into emerging themes (Malterud, 1998). Themes with relevance for the interpretation of findings in the individual interviews were used in Paper III.
Paper IV

Individual interviews

Individual, semi-structured interviews were conducted with 11 females (15-22 years) and 11 males (16-21 years). Two young well-educated Ugandans, one female and one male, were appointed as research assistants: the female researcher held a bachelors degree in development studies and the male, who was a social worker at the Muvubuka Agunjuse centre, held a diploma in social administration. Interviewees were chosen by the social worker through purposeful sampling of youths who were willing to reveal their feelings about HIV testing: females and males within the age frame 15 to 22 years were included and both in and out-of-school youths were represented. Participants were initially recruited among visitors to the youth centre. Eventually, four young girls were interviewed in their homes, as it was hoped that the girls would feel more at ease with the interview situation if interviewed in their homes and this also allowed inclusion of girls who otherwise would not have been able to participate, as they usually cannot spend much time away from home.

Oral and written information about the purpose of the study was given to participants before they signed a consent form and it was explained that confidentiality was important and participation was voluntary. Participants decided if they wanted to be interviewed in English, the official language, or in Luganda, which is the most common local language. If Luganda was chosen, one of the Ugandan research assistants conducted the interview, translated it into English and transcribed immediately after. A pre-tested question guide was used and probing was done to follow up on participant’s answers. The interviews started with questions about social background and living conditions, followed by a question about experience of STIs. The key issues were:

- Have you ever been HIV tested? If yes: Tell us as much as you can about that experience.
- Tell us as much as you feel comfortable about how you made up your mind about going for VCT or to abstain from VCT.

Finally, in order to close the interview, the participant was asked what is most important in her/his life at the moment and what s/he is hoping to be doing in the next 5 to 10 years. Each interview lasted from 20 to 45 minutes.

Focus-group discussions

Five FGDs, three with females and two with males only, were conducted with 41 participants. The females were 13 –19 years and the males 12-24 years. The group sizes ranged from 6 to 12. The first author led the discussions, with the two research assistants operating the tape recorder and translating between Luganda and English whenever needed. One FGD was held
in the clinic, and four took place in a community centre. All youths that turned up were allowed to participate and it was explained that participation in the discussion was voluntary. The purpose of the study and the importance of confidentiality were stressed before the discussions started. Each FGD lasted for approximately one hour. Topics for the discussions were:

- Tell us what you know about HIV and AIDS
- What is the difference between being HIV positive and having AIDS?
- What happens to a person after HIV testing?
- Why do you think some people abstain from HIV testing?
- Does anyone have experience of HIV testing? Can you tell us about it?

Analysis

All interviews and FGDs were tape-recorded and transcribed verbatim prior to analysis, which followed the procedures of qualitative content analysis (Graneheim & Lundman, 2004). The data from interviews and FGDs were analysed together as one set of data and the analysis was conducted in four steps. First, the whole text was read several times and meaning units were identified. A “meaning unit” is a part of the text, a sentence or several paragraphs where perceptions of HIV/AIDS or attitudes to VCT are revealed. Second, all meaning units were condensed to shorten the text, but keeping the message. These condensed meaning units were discussed with the Ugandan research assistants in order to avoid cultural or other misconceptions. Third, the condensed meaning units were categorized, that is, organized according to similarities and differences in content. Finally, data were divided gender wise and condensed meaning units were analysed for differences between genders.

Ethical considerations

The research included youths who were underage (under 18 years, according to Ugandan laws). Initially, only those 18 years and above were considered for inclusion, which would have avoided the problem with informed consent from parents and guardians, that might have been difficult or impossible to obtain in many cases: these young people come to the clinic with the expectation that confidentiality was guaranteed. However, a study excluding under 18 year olds would have reduced the value of the information obtained, so it was decided all visitors who fulfilled the inclusion criteria, being a adolescent and being sexually experienced (Study 2, Papers II and III), should be included. Well-trained and experienced counsellors from AIC undertook pre- and post-test counselling in the study of VCT for HIV, in order to reduce any social or psychological problems for the youths that were related to the research (Study 3, Paper IV).
The studies were approved by the Research Secretariat, President’s Office, the Uganda National Council for Science and Technology, and by the Ethics Committee, Uppsala University, Sweden. For the studies in Kisenyi approval was also obtained from the MOH, Buganda Kingdom.
Results

Characteristics of the study population

Study 1 (Paper I)

All participants, except one, had at least finished primary school and one was a university student. Four of them had given birth, but one had lost her child due to pneumonia and was now divorced. Two of the mothers were cohabiting with a man and one was divorced and living with her sister. Four of the girls stayed with their mothers. No one lived with both parents. They were all sexually experienced: ten had a boyfriend or husband and four did not have a regular partner.

The males had all at least finished primary school. Four males lived with both parents and two lived with their mother. Two of the young men had never had sexual intercourse. Only one of the sexually active males had a steady partner.

Study 2 (Papers II and III)

The FGDs, which were conducted after data collection for the prevalence study, consisted of four groups. One group was staff at the clinic: midwife, medical officer, social worker, lab-technician and two peer communicator. In the youth groups, the age range was 16 to 21 years. All of the FGD participants had at least primary school education (7 years), except one street child who had not attended school.

No more than 10% of the girls and 11% of the boys in the prevalence study were living with both parents. Many adolescents had been sent away from their families in the village due to poverty. Unemployment was high among those who were out of school, especially among girls: 79 out of 114, who were out of school or 40% of the study population, reported that they were unemployed or had nothing to do. Only 14% of the boys were unemployed. School attainment was reasonably high, 42% of females and 47% of males. Twelve percent of the girls and 25% of the boys reported that they had consumed some alcohol the week before they participated in the study. Tobacco
smoking is still rare in Uganda with only 3 girls and 12 boys reporting having this habit.

Median age for first intercourse was 16.0 years for both females and males. Eighty-eight percent of the girls and 74% of the boys were sexually active (defined as having had intercourse within the last 3 months). Eighteen percent of the females and 7.5% of the males reported monogamous marriage. Nine females lived in polygamous marriages.

Study 3 (Paper IV)

All participants, except one boy who had never been to school, had at least six years of education. Five of the 11 females were still students. One worked as a house girl and the others were looking for jobs. One of the females lived with her mother, the others lived with guardians, relatives or alone: one unmarried female was cohabiting with her boy friend. Five of the males were still students, four were unemployed, and one worked as a journalist and one was a drummer. The majority of the males lived with guardians or relatives, but not with parents. None of the males was married or cohabiting, although one was the father of two children. With the exception of two females, all participants were sexually experienced.

Despite rough living conditions reported by many, with a struggle for daily living and education, many had a positive attitude to their future and described that they hoped to live good lives. Both females and males described how they wanted to be useful to others in the future:

“|I hope to be working so that I can help my parents and my sisters and brothers.” (16-year-old female, individual interview)

“I’m expecting to be a good citizen, working, good earning, to support my life and my mother and my family too.” (19-year-old male, individual interview)

No detailed information about the social background of the 20 females and 21 males participating in the FGDs were taken.

Abstaining, being faithful and condom use

Opinions and experiences described below were expressed in FGDs and interviews in all studies, unless a specific paper is indicated.
Abstaining from sex

Abstaining from sex was described as something desirable and something to aim for, but many obstacles were listed. A change in cultural values and the declining role of religion has made pre-marital sex more acceptable, even so, the fear of God was given as a reason for abstinence by one young man (Paper I).

The natural urge to have sex was one reason why especially young men claimed they could not abstain. Masturbation was generally discarded, as it is unnatural or even weird according to informants (Papers I and III). Falling in love and fear of losing a loved partner was a reason given by females: when you fall in love, you forget about being careful.

Youth who were still virgins suggested that a good strategy would be to keep busy, as this would prevent you from thinking about sex (Papers I and III).

Poverty was cited in the FGDs as a reason why girls sometimes have sex with older men: the ‘sugar-daddy phenomenon’. According to the health workers, the sugar-daddy phenomenon is not new, but is an increasing problem. It started in the 1970s and used to be done in secret.

“But now it’s on the market like nobody’s business. It’s too much now.”
(Female health worker, FGD, Paper III)

Poverty and material needs could explain why young girls would expose themselves to such risks.

The dilemma of avoiding STIs and pregnancy and still responding to needs and feelings was discussed (Paper IV). It was suggested that a girl could refer to the fact that she is still in school if the boyfriend wants to have sex, she could also tell him that she wants to avoid pregnancy. If she was not in school, she could ask the boy to wait until she had something to do. However, if she also wanted to have sex, condom use was suggested. HIV testing together with the boy before having sex was suggested as an alternative option: VCT for HIV for couples was described as a means of protection as it can help people to stay faithful.

Girl 1: “Ok I have a suggestion: There are times whereby you are out of school or let me say, like you are 20 years and you really want the money and you really love that boyfriend and you can’t abstain so me, what I advice is that you use condom. (Laughter)” Girl 2: “Before that it is good to first go testing, blood testing. After that even though you are HIV negative you also use a condom because it can come as an accident and you get pregnant which is not good.” (Female FGD, Paper IV)
Peer influence and curiosity were mentioned as other reasons for why abstaining from sex was difficult. It was explained that youths needed to find out about sex from their own experience and that women dressed and behaved in a way that was tempting young men to have sex.

“So there is no way you can abstain. And also the way women dress, it tempts you (Laughter from other participants).” (Male FGD, Paper IV)

Being faithful
Many youths, both females and males, explained that it was good to have only one lifetime partner but the problem was how to find someone you could trust. They claimed that good examples were hard to find among adults (Paper I). Females claimed that men could not be trusted and males claimed that it was the right of a man to have more than one partner. However, there were exceptions and you had to spend a long time studying a person before you engaged in sex: you needed to know the character of the person and how he or she lived.

A new partner within the last three months, as well as more than one partner in the last three months, was more common among males and they also reported a higher median number of lifetime sexual partners. Only 26 (13%) out of 199 females in Paper II said that they thought that their current or latest partner had been sexually faithful, the rest were not sure or that they thought that the partner had been unfaithful. Forty-seven percent of the females admitted being unfaithful to their current or latest partner: the males gave similar answers, with 8.5% trusting their partner and 57% admitting that they themselves had been unfaithful. Suspicion of infidelity was sometimes given as a reason to have an HIV test. Participants claimed that unfaithfulness, in the meaning having concurrent sexual relations, was common and that boys and girls had different reasons to have sex with more than one person. Both males and females brought up for discussion the issue of gifts and money in exchange for sex. It was common not only within the sugar daddy phenomenon but also in relationships between age-mates. Twenty-three percent of the females and 7.5% of the males answered that they had received money or gifts in exchange for sex. For men it was a “right” to have more than one partner, but it was not socially accepted for women. Someone mentioned that families no longer chose spouses: now the decision was left to the individual and therefore, the relation had to be tested, before you marry (Paper III).
Condom use

Condom use at first intercourse was reported by 53.5% of females and 42.5% of males: at latest intercourse, 34% of females and 43% of males had used condoms as protection. Very few had any experience of other contraceptive methods such as family planning pills or injectables.

Condoms were considered as good protection against pregnancy and STIs, but some questioned the reliability of the condoms: they referred to rumours about “some small outlets, which allows the virus to pass through” and that condoms only protect against pregnancy. It was also suggested that a woman could never be sure that a condom was used, even if she thought so (Paper IV), whereas, other girls claimed that girls could and should take the initiative for protection and put on the condom:

Moderator: “Can you as a girl, when you are with a boyfriend decide that you use a condom?” Girl: “I can put a condom on the boy, to make sure that now the condom is on.” (Female FGD, Paper IV)

One obstacle to condom use was that it was a sign of distrust to refuse “to go live”. By some people, condom use was considered to promote prostitution and in marriage, it was often seen as a sign of distrust to suggest condom use. It was especially difficult to suggest condom use with a regular partner, although “everyone” knew that condoms must be used or you have to abstain from sex. (Paper I). To put on a condom can be a way of showing that you really love somebody. Condoms were used at the beginning of a relationship, but after some time “they use to abandon it and then they go live”. Low education was mentioned as an obstacle to condom use (Paper III).

Voluntary counselling and testing for HIV

Attitudes to voluntary counselling and testing for HIV

In the prevalence study, respondents were asked about previous HIV testing. Thirty-two females and 12 males reported that they had been tested. The reasons for not testing are shown in Table 3. The most common reason for abstaining was that they did not think they were at risk of infection, followed by that they were fearful of the result. Other reasons included: not knowing where testing could be done and that they could not afford a test. (Paper III)
Table 3. Reasons to abstain from HIV testing.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Females n=167</th>
<th>Males n=93</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Don’t think there is a risk of being infected</td>
<td>54 (27)</td>
<td>25 (23)</td>
<td>0.40</td>
</tr>
<tr>
<td>Can’t afford the test</td>
<td>19 (9.5)</td>
<td>14 (13)</td>
<td>0.44</td>
</tr>
<tr>
<td>Don’t know where it can be done</td>
<td>32 (16)</td>
<td>10 (9)</td>
<td>0.08</td>
</tr>
<tr>
<td>Would fear the result</td>
<td>45 (23)</td>
<td>21 (20)</td>
<td>0.46</td>
</tr>
<tr>
<td>Partner doesn’t want me to</td>
<td>3 (1.5)</td>
<td>0</td>
<td>0.55</td>
</tr>
<tr>
<td>Other reason</td>
<td>13 (6.5)</td>
<td>22 (21)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>No response</td>
<td>1 (0.5)</td>
<td>1 (1)</td>
<td>1.0</td>
</tr>
</tbody>
</table>

The attitude to VCT for HIV among participants in both interviews and FGDs was ambiguous. HIV testing would help youth to “control themselves” whether they were HIV positive or negative; however, knowing HIV status was also said to be destructive. As long as you do not know that you have the HIV infection, you have hope: after knowing you start to worry. The VCT situation was described by some as very upsetting and scary and one young man said he did not know how he would be able to move from the counselling room if he knew he was infected. (Paper I)

Inability to cope with the knowledge of being HIV infected was one of many reasons mentioned for abstaining from HIV testing. The health workers felt that VCT would benefit the youths and help them practice safe sex. Adequate information could encourage the youths to be tested:

“Being HIV positive does not mean you have AIDS and that you are going to die tomorrow. So we should put such encouraging messages to them. And such things as killing themselves do not arise.” (Male social worker, Paper III)

In Study 3 (Paper IV), where the focus for the research was on attitudes to VCT, a wide range of attitudes were identified, from having no problem with it, through a multitude of obstacles, to being absolutely against it. A perceived high-risk could be a reason to test.

“I have had unprotected sex with someone in the village when we went for the burial ceremony. It was really knocking on my head that you never know, you may have got HIV or gonorrhoea as I did last time. That’s why I have come back for this HIV testing so that I can know my life status very nicely.” (Male, 19 years, interview, Paper IV)
However, fear that the young person would be unable to cope with the knowledge of a positive status could also be a reason for abstaining. There was a fear of segregation and mistreatment by others. A common belief was that the knowledge of a positive status could shorten someone’s life.

“Like me, it is not money, not anything else…… But me, I cannot go for testing because I want to die not knowing what has killed me. But when you get to know the truth you start worrying, thinking a lot. But at least you die not knowing that it is HIV……… At least you get to know that you are dying of AIDS but not knowing earlier. You understand? When you know earlier you die quickly.” (Male FGD, Paper IV)

A perceived low risk was indicated as both a motive for and against HIV testing. Lack of money and time were important obstacles to VCT for HIV. Youths in school had difficulties leaving school for HIV testing. Many were in boarding schools, and could leave school only during vacation. For youths who were employed the problem was leaving work during office hours, when the testing sites were open. Many of these young people already had problems getting money for school fees and other necessities and parents might not find it worthwhile to pay school fees for someone who was HIV positive. A situation where lack of support was especially traumatic was after sexual violence. This quotation illustrates such a situation:

“Our of us don’t engage in sexual relationships but there are some cases like me, My uncle came at home, he raped me. So now I don’t know if I have AIDS or not (starts crying)……. I want to know where I can get support. If I test positive, where can I get support? Because they will stop paying school fees for me if I’m positive.” (Female FGD, Paper IV)

Those who decided to test had usually thought about how to act if the test result was positive. They were prepared to change their behaviour in order to avoid spreading the disease to others and, if necessary, seek medical care. A negative, as well as a positive, test result would help them to change their behaviour, reduce the number of partners and avoid spreading the infection to others.

Some informants had experienced symptoms that they thought were signs of STIs: itching of the genitals was a common symptom among both males and females and it was generally thought to be an STI. They suspected the symptoms to be signs of HIV. Skin problems were also believed to be signs of HIV infection and thus a reason to test.

Some participants described that they did not trust the results to be reliable - they claimed that the test result could be different depending on the testing site, as they knew that this had happened to others. One focus group dis-
cussed the possibility that people abstain from testing because of fear that infected needles are used by some health workers. The fear of pain connected to the blood sampling procedure was sometimes the only reason given for abstaining from HIV testing. Finally, participants who perceived themselves at no risk of having HIV infection argued that this was a good reason for not testing.

Perceptions of HIV and AIDS

A prominent perception of HIV and AIDS in the VCT study (Paper IV) included an understanding of the seriousness of the disease. Group discussions revealed that these young people were aware of the nature of HIV infection with a latent stage before the symptoms of AIDS appear.

AIDS was perceived as causing a multitude of symptoms such as discolouring of the hair, weight loss, herpes zoster and skin rashes, as well as fever and diarrhoea. AIDS was also described as causing a change in behaviour in those who were ill. Participants talked about their problems of coping with people living with AIDS. A person with AIDS was believed to “get a bad heart” which meant being jealous of those who are still healthy. The experience was also that people with AIDS could be aggressive towards others and that they would try in different ways to trick other people to become infected with HIV.

Unprotected sex was perceived to be a common way of transmission. Other routes of transmission mentioned were sharing sharp objects, for example nail cutters or injections in hospitals. Washing clothes for a person with AIDS, without wearing gloves, was also perceived as dangerous. Some participants perceived it was possible to be born with HIV and to remain symptom-free until the upper teens. In addition, non-penetrative sex, just “romancing”, was perceived as a possible route of transmission.

Participants generally expressed a positive attitude to people living with HIV and AIDS. Even so, it was thought that other people should be prevented from knowing if someone in the family had AIDS, sometimes the family might say that it was cancer or tuberculosis in order to hide the fact that it was AIDS. Blaming AIDS on witchcraft was also mentioned, but was said to be more common in rural areas.

It was considered that other people might segregate and mistreat someone who is HIV positive. This was assumed a reason for many to abstain from HIV testing and some participants claimed that this was how they themselves would react to a positive HIV test. The expression “to feel small
among friends” was used to explain the fear of segregation once you know that you are HIV positive.

“I have never cared for a sick person but I know that AIDS brings constant fever, vomiting every time, diarrhoea which is on and off, and you also feel small among your friends.” (Female FGD, Paper IV)

People with AIDS need good care in terms of emotional support, good nutrition and medical care. A common perception was that a person with HIV infection would live longer if family and friends gave emotional support. The emotional aspect, that is, living healthily and happily, was emphasized as important.

“Then I do my own business and go – and then I get friends. No sad times I want to have. I want to be happy all the time because it has come and it is not going to do what – to go away. It has come forever, forever, until you die.” (Female FGD, Paper IV)

ARV drugs were never mentioned in the interviews or discussions but medical treatment in general was considered to help someone with HIV infection to live longer.

Prevalence of STI and HIV

For females the prevalence of STIs was 9.0% (NG), 4.5% (CT), 8.0% (TV) and 4.0% (syphilis) and for males 5.7% (NG), 4.7% (CT), 0% (TV) and 2.8% (syphilis): 20.6% of the females and 13.2% of the males had at least one of the four STIs. Thirty-six out of 300 blood samples were HIV positive: 30 of which were from females (a prevalence of 15.2% (CI: 10.7-21.2)) and six were from males (prevalence 5.8% (CI: 2.3-12.3)).

Risk factors for STIs and HIV

Less than five years in the school system was connected to the highest risk of having an STI with an odds ratio (OR) of 3.2 and 95% CI 1.05-9.86, followed by being pregnant but unmarried with OR 3.0 (CI: 1.07-8.47). Other significant risk factors were being out of school (OR 2.3) and being unemployed (OR 2.1).

According to the participants in the FGDs (Papers III and IV), girls who dropped out of school were also at risk of becoming pregnant. Parents tend to send their daughters away to stay with relatives if they drop out of school. It was not socially acceptable for a girl to become pregnant while she was
still at home. The situation for a girl who became pregnant when she was in school was even worse, she would have to leave school and sometimes the parents would send her away from home.

Genital symptoms reported in the interviews were not correlated to the detection of any STI when symptoms were analysed individually. The OR of having at least one STI in girls with genital symptoms was 1.3 (CI 0.54-2.97). According to the FGDs (Paper III), many girls experienced sores and genital discomfort during and after their periods. The girls used to put toilet paper in the vagina during periods because they could not afford pads or tampons.

Age at first intercourse did not discriminate between those with and without one of the infections. Neither did information about having experienced forced sex, reported by 21% of the females and 8% of the males, Likewise, no increased risk connected to receiving money or gifts in exchange for sex, as reported by 23.5% of the females and 7.5% of the males, was determined. Very few girls admitted having had more than one partner, although they admitted they had been unfaithful to their partner. This inconsistency in answers made information about number of sexual partners unreliable and any conclusions must be made with caution. It could not be proved that females with a partner more than 4 years older, as reported by 33.5% of the girls, or a partner more than 10 years older as reported by 14% ran a higher risk of contracting an STI.

Some social and behavioural factors appeared connected to a lower than average risk for STIs. The most important low-risk factor was “last intercourse was protected by a condom” (OR 0.32, CI 0.13 – 0.76). Other factors that indicated a low risk were: “does not think that her partner has been unfaithful” (OR 0.46, CI 0.13 – 1.60) and “she has been HIV tested” (OR 0.50, CI 0.17-1.52).

For males, the only significant social or behavioural risk factor for any of the four STIs was reporting a new sexual partner within the last three months. “Pain on passing urine” and “discharge from the urethra” were associated with STIs among males.

Social disadvantages among girls, such as unemployment and little formal education, were correlated to a higher risk of HIV infection. Unemployment, a predictor of STI and HIV infection among girls, was more often reported by girls than by boys (p<0.001).

Behavioural factors, such as drinking alcohol and smoking cigarettes, were also connected to higher HIV risk for girls: only three (1.5%) of the girls and
12 (11.2%) of the boys were smokers. No statistically significant correlations between social and behavioural factors and HIV infection among males (only six cases) were determined. Alcohol use and tobacco smoking were more common among boys. Only two girls reported ever using drugs, whereas, 16 of the boys admitted that they had used drugs, the most common being marijuana. In the focus groups, the youths blamed their alcohol use on bad influence from parents and on peer pressure:

“You have to test that alcohol, at least to get the right information.” (Adolescent boy, Paper III)

Genital symptoms were present in 87% of HIV positive girls and in 75% of the HIV negative cases: the difference was not statistically significant. Bleeding after intercourse, sores on the genitalia, and a bad smell from the vagina were reported more frequently by HIV positive girls. Infection with CT and/or NG among girls was positively correlated to HIV infection. Table 4 shows correlation between HIV status and symptoms and treatable STIs among females.

Table 4. Relation between genital symptoms, the four treatable STIs and HIV among adolescent girls

<table>
<thead>
<tr>
<th>Symptom/infection</th>
<th>HIV positive</th>
<th>HIV negative</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=30</td>
<td>N=167</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVD</td>
<td>22 (73)</td>
<td>92 (56)</td>
<td>2.2</td>
<td>0.9-5.2</td>
</tr>
<tr>
<td>Bad smell from vagina</td>
<td>18 (60)</td>
<td>60 (36)</td>
<td>2.6</td>
<td>1.2-5.9</td>
</tr>
<tr>
<td>Genital sores</td>
<td>16 (53)</td>
<td>53 (32)</td>
<td>2.4</td>
<td>1.1-5.3</td>
</tr>
<tr>
<td>Genital itching</td>
<td>20 (67)</td>
<td>82 (50)</td>
<td>2.0</td>
<td>0.9-4.5</td>
</tr>
<tr>
<td>Bleeding after intercourse</td>
<td>8 (27)</td>
<td>4 (2.4)</td>
<td>14.8</td>
<td>4.1-53.3</td>
</tr>
<tr>
<td>Any of the four STIs</td>
<td>14 (47)</td>
<td>27 (16)</td>
<td>4.5</td>
<td>2.0-10.4</td>
</tr>
<tr>
<td>NG or CT</td>
<td>8 (27)</td>
<td>15 (9)</td>
<td>3.7</td>
<td>1.4-9.6</td>
</tr>
<tr>
<td>TV</td>
<td>5 (17)</td>
<td>11 (7)</td>
<td>2.8</td>
<td>0.9-8.8</td>
</tr>
<tr>
<td>Syphilis</td>
<td>3 (10)</td>
<td>5 (3)</td>
<td>2.5</td>
<td>0.6-10.4</td>
</tr>
</tbody>
</table>

Five out of six males with HIV infection reported some kind of genital discomfort. The only significant risk factor determined was the self-reported presence of genital sores by three out of six males. One of the six HIV infected males was also infected with CT.

Eight (27%) of the HIV positive girls, compared to 24 (14%) of the HIV negative girls had been tested for HIV: the difference was not statistically significant. Among the HIV positive males, only one had been previously tested.
Evaluation of the syndromic approach

The relation between reported symptoms and any of the infections is shown in Table 5.

Table 5. Genital symptoms reported by females and males and relation to infection with chlamydia trachomatis (CT), neisseria gonorrhoea (NG), trichomonas vaginalis (TV) and syphilis and HIV.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency</th>
<th>CT and/ or NG</th>
<th>TV</th>
<th>Syphilis</th>
<th>HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any genital symptom</td>
<td>199</td>
<td>23</td>
<td>16</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>AVD</td>
<td>115</td>
<td>14</td>
<td>9</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>Spotting</td>
<td>21</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Bleeding after intercourse</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Bad smell from the vagina</td>
<td>78</td>
<td>11</td>
<td>7</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>Genital itching</td>
<td>104</td>
<td>15</td>
<td>6</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Pain on passing urine</td>
<td>62</td>
<td>9</td>
<td>4</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Pain during intercourse</td>
<td>67</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Genital sores</td>
<td>69</td>
<td>9</td>
<td>2</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>No symptoms</td>
<td>45</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Males</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any genital symptom</td>
<td>107</td>
<td>11</td>
<td>0</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Urethral discharge</td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain on passing urine</td>
<td>16</td>
<td>8</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Genital sores</td>
<td>35</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>No symptoms</td>
<td>18</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

With the information about potential risk factors from the questionnaires, the midwife’s judgement on which syndromic approach, if any, should be used, and the laboratory results, the performance of the AVD syndrome management in the hands of the midwife could be evaluated. Sensitivity, specificity and PPV for the syndromic approach used in this clinic were calculated and different theoretical models built on high-risk or low risk factors were constructed. High-risk factors used in the models were: unemployment, less than 5 years in school, last intercourse was unprotected by condom, more than one partner in the last 6 months. Low-risk factors were: trust partner, condom use at latest intercourse, has been HIV tested.

The midwife identified 14 out of 23 (sensitivity 60.9%) of the girls with cervical infection. She correctly diagnosed 67 out of 174 (specificity 38.5%) girls with no cervical infection as healthy. The PPV of the AVD syndrome management algorithm was 11.6%, which meant that 11.6% of those who
were treated as if they had a cervical infection were actually infected. According to the nurse, 143/199 women had an STI syndrome. Thirty-one (21.7%) of these women actually had at least one STI, whereas 112 did not have any of the four STIs. Ten out of 41 (24.4%) women with at least one STI were not identified as infected. In 83% of the cases, the midwife and the medical officer had the same opinion about the reason for the visit. To the question, if this was an STD syndrome or not, they gave the same answer in 78% of cases and the syndrome treated was the same in 79%.

Only two out of the nine females with CT were suggested correct treatment by the midwife and four out of nine by the medical officer. Of the 18 cases of NG, 6 were suggested the correct treatment by midwife and 8 by the medical officer. Correct treatment for the 16 TV infections was suggested in nine and five cases respectively. Both the midwife and the medical officer suggested correct treatment for syphilis in one out of eight cases.

The performance of the WHO risk score as described in the introduction was tested by computerized simulation. Twenty-nine (14.6%) of the women had a new partner in the last three months and 17 (8.5%) had had more than one partner in the last three months. In 25 cases (12.6%), the partner had complained of genital symptoms. Sensitivity for the WHO risk score algorithm was 26% (6/23 women with cervical infection were correctly identified as infected). The specificity was 67.4% (116/172 without infection were correctly identified as healthy), PPV 9.7% (9.7% of those identified by the WHO risk score actually had a cervical infection).

A range of combinations of different high-risk and low-risk factors and their ability to predict cervical infection was tested. Sensitivity, specificity, PPV and OR with 95% CIs for some of the different algorithms are presented in Table 6. Model A is the original WHO syndromic approach algorithm used by the midwife. Model B is the AVD syndrome algorithm with the WHO risk score added. Models C and D have different high-risk factors as entry points. Model E has an absence of low-risk factors as entry point, whereas in models F and G visible pus on examination and symptomatic partner were added as entry criteria. Model G: treat women with a symptomatic partner and/or when pus was found on vaginal examination and all women without any of the three low-risk factors, was found to be the most promising model. This model was named the Adolescent AVD Management Algorithm (Figure 1). The original WHO algorithm (Model A) was compared to the performance of the Adolescent AVD Management Algorithm (Model G) and a significant gain in sensitivity (p<0.001) was determined. Although there were gains in specificity and PPV, these were not statistically significant.
Table 6 Models used for screening for infection with chlamydia and/or gonorrhoea among adolescent girls

<table>
<thead>
<tr>
<th>Model used for screening</th>
<th>Sensitivity %</th>
<th>Specificity %</th>
<th>PPV %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. WHO AVD algorithm used by the mid-wife</td>
<td>60.9</td>
<td>38.5</td>
<td>11.6</td>
</tr>
<tr>
<td>B. AVD syndrome algorithm with the WHO risk score</td>
<td>26.1</td>
<td>67.4</td>
<td>9.7</td>
</tr>
<tr>
<td>C. Treat women with any out of 4 high-risk factors*</td>
<td>78.3</td>
<td>26.3</td>
<td>16.5</td>
</tr>
<tr>
<td>D. Treat women with at least 2 of the 4 high-risk factors</td>
<td>39.1</td>
<td>71.9</td>
<td>15.6</td>
</tr>
<tr>
<td>E. Treat all women who don’t have any of the low-risk factors**</td>
<td>69.6</td>
<td>51.7</td>
<td>16.2</td>
</tr>
<tr>
<td>F. Treat when pus is seen on vaginal examination and all women without any of the low-risk factors</td>
<td>73.9</td>
<td>50</td>
<td>16.5</td>
</tr>
<tr>
<td>G. Treat women with a partner who complains of genital symptoms and/or when pus is seen on vaginal examination and all women without any of the low-risk factors</td>
<td>82.6</td>
<td>47.1</td>
<td>17.3</td>
</tr>
</tbody>
</table>

*High-risk factors: unemployed, less than 5 years in school, last intercourse was unprotected by condom, more than one partner last 6 months

**Low-risk factors: trust partner, condom use at latest intercourse, has been HIV tested
Figure 1. The Adolescent AVD Management Algorithm

Adolescent girl complains AVD or suspects she has an STI

- Do you have a sexual partner who is currently treated for an STI?
- Has your partner complained symptoms like pain on passing urine or pus from the urethra?

Yes to any
Examine and treat vaginal and cervical infection according to national recommendations

No

Is your partner faithful?
- Did you use condom at latest intercourse?
- Have you been HIV-tested and if so - was the test negative?

Yes to any
Examine and treat if symptoms and signs of vaginal infection.
If there is pus in the vagina, treat also cervical infection

No to all
Examine and treat vaginal and cervical infection

In case of suspected STI:
- Reschedule for follow-up visit
- Encourage her to bring her partner for examination and treatment
- Encourage condom use and VCT for HIV
Discussion

The aim of this thesis was to increase knowledge and understanding about reproductive health, especially STIs and HIV, among urban Ugandan youth. The starting point was concern about the problems of correctly diagnosing and managing treatable STIs without laboratory resources. Of special concern were the perceptions among youth on how they can avoid STIs and HIV, their perceptions of HIV and AIDS, and their attitudes to VCT for HIV.

Methodological discussion

Quantitative research methods with biological sampling, questionnaires and statistical calculations of prevalence and correlations were used, as well as qualitative data collection with individual interviews, FGDs and qualitative content analysis.

The prevalence of the outcome variables: cervical infection and presence of any out of four STIs were unknown in the population, likewise the prevalence of potential social risk factors, genital symptoms, condom use and sexual risk behaviour. Thus, the power estimation was uncertain and due to the small sample size, few significant correlations between cervical infection and characteristics were retrieved from the questionnaires. For this reason, the presence of any of the four STIs as a proxy for risk to have a cervical infection was used when the theoretical flow-chart models were constructed.

Obtaining valid data on sexual behaviour was a challenge. Inconsistency in reporting sexual behaviour caused a problem with validity of quantitative data in the present study. Adolescent girls are likely to conform to societal expectations and modify their answers in order to reduce the gap between their actual behaviour and the perceived expected answers. In a study in Kenya (Hewett et al., 2004), adolescent girls were randomly assigned to two different modes of survey interview: face-to-face-interview and audio computer assisted self-interview (ACASI). The picture emerging from the face-to-face interviews is that most girls have had sex only with boyfriends; whereas, from the ACASI, a much wider range of less socially accepted sexual encounters is revealed. Even in the ACASI group, inconsistency in
reporting is common: only 43% report ever having had sex but this figure increases to 68% when questions about specific types of partners and coerced sex are included.

Data collected with quantitative methods, such as self-completed questionnaires or structured face-to-face interviews, can be more representative than qualitative data, if the sample is big and representative of the target population but qualitative data can provide deeper insights into the experiences of participants, according to Huygens et. al (1996), who reviewed and compared six different studies, all aimed at examining sexual behaviour in rural Uganda. Self-reported sexual behaviour is fraught with inconsistencies, whereas, in-depth interviews appear more likely to promote honest responses (Plummer et al., 2004).

In three of the papers on which this thesis was based, a qualitative research methodology was applied. There are differing opinions on whether quantitative and qualitative research methodology can be combined within the same research project. According to Dahlgren et al (2004), at least three views can be recognized. In the “purist” view, the methods are incompatible. According to the “situationalist”, the methodologies are appropriate for different purposes but can be used to complement each other. The third standpoint is the “pragmatist view”: quantitative and qualitative data collection methods can be used within one study in order to address one research question. In this research we used qualitative data (Paper I) to construct the questionnaire for Study 2, Papers II and III. In Paper III qualitative data were used to help understand the meaning of the data from a survey and in Paper IV only qualitative methods were used.

Female informants were reluctant to speak in the individual interviews, both in Studies 1 and 3. Many Ugandan girls are not as outspoken as Ugandan boys usually are, and it was possible that FGDs would have been a better approach to gain insights into how young people perceive advice on sexual behaviour. Girls who participated in FGDs appeared more relaxed, and interaction with the other girls in the group stimulated even the shy participants to contribute to the discussion.

Phrasing of survey questions is important as many words, for example “abstinence” and “sexual partner” have different meanings to different people (Huygens et al., 1996). For the interviews in the study on safe sex advice (Paper I), there was no interviewer or research assistant employed who could interview in the local language. Although all participants could understand and speak English reasonably well, it is possible that deeper understanding could have been obtained if the native language had been used, as the sam-
pling could have included younger youths and those with a different social background.

In qualitative research it is common that the pre-knowledge, i.e. the experience from the research field and the knowledge the researcher had before the research commenced, is considered. I had been working as a doctor in both Kiswa clinic and at the Muvubuka Agunjuse centre. This could have led some of the participants to answer in a way that would please me instead of offering their “true” views. However, I had the impression that most informants saw me as an outsider who needed to be informed about “how things really are”, and they did not assume that I already had this knowledge. Further, the resemblance of the views and experiences reported by participants in the different field works support the validity of data.

The present studies were conducted among youths who attended a youth health clinic in a slum area and were therefore not a random sample from the population. Conclusions should be made with this in mind.

Reflections on the results

The syndromic approach

Treatable STIs were common in the study population as were genital symptoms, especially among the females. Many received treatment according to the national guidelines built on the original WHO algorithm. Even so, almost 40% of those who were infected by either CT or NG were not identified as being infected. The most important finding was the lack of correlation between the symptom AVD (entry point to the algorithm) and infection with CT, NG or any of the four STIs. Infections with CT and NG are known to be asymptomatic in many patients, both males and females (Brabin et al., 1995; Grosskurth et al., 1996; Paxton et al., 1998).

Syphilis was not diagnosed with the GUD algorithm in this study as patients with syphilis rarely present with genital ulcers (Coles, 1996). Four out of the eight females diagnosed with syphilis in this study were pregnant. Pregnant adolescent girls should be offered a syphilis test as diagnosis and appropriate treatment can prevent miscarriage and a range of perinatal complications (Schulz et al., 1987; Watson-Jones et al., 2005).

The balance between treating as many as possible, in order to reduce the risk of complications and further spread of infection, and to avoid over-treatment is difficult (Hawkes et al., 2002; van Dam et al., 1998). Hudson argues that
the emphasis of the syndromic approach should be on providing counselling about abstinence, condom use and contact tracing rather than on extensive treatment with antibiotics (Hudson, 2001). There are recent worrying reports on high prevalence of Ciprofloxacin resistant gonorrhoea in South Africa where the syndromic approach for genital discharge syndromes is used (Moodley & Sturm, 2005).

Flow-charts with simple laboratory tests or locally developed risk scores, all with the ambition of reducing over-treatment have been developed (Germain et al., 1997; Obunge et al., 2001). WHO recommends that when such flow-charts are constructed to be used on adolescents, risk assessment questions should be based on sexual behaviour rather than demographics (WHO, 2001). In the present study, three factors appeared suitable for use in a risk score model: condom use at latest intercourse; trusting that the partner is faithful; and has been HIV tested. These factors were suitable because they not only tended to correlate to reduced risk, but were also relevant in consultations with young women who feared they were infected with an STI. The issue of condom use should always be discussed with sexually active adolescents, likewise the nature of sexual relationships and feelings about HIV testing. Including these questions would improve the quality of consultations.

The syndromic approach is well suited for management of STIs in men (Alary et al., 1998; Djajakusumah et al., 1998; Moherdau et al., 1998; Wang et al., 2003). Most young men with CT or NG were correctly identified and treated according to the urethral discharge syndrome algorithm, although, a considerable number of males reported urethral pain without having any of the STIs that our research included. The role of other possible microorganisms in causing these symptoms was not investigated. A possible pathogen micro-organism, Mycoplasma genitalium, has been verified in symptomatic urethritis in men without CT or NG infection (Falk et al., 2004). Although the ethiological role of Mycoplasma genitalium in RTI in women is plausible, it needs to be investigated further (Anagrius & Lore, 2002).

It was reasonable to assume that management of STIs in the Muvubuka Agunjuse clinic was better than average in Uganda and East Africa, because staffs were well trained and had a genuine interest in helping youth. Essential drugs were not always available but during the data sampling, all STI drugs were provided by the research project. The prerequisites for the consultation were not excellent but better than in most clinics, with privacy for consultation and examination. Still the result was rather poor with a low sensitivity and in spite of a very high rate of over-treatment, many youths did not, as a result of the application of the syndromic approach, receive
curative treatment. According to a study in 1999 (Voeten et al., 2001) the quality of STI case management in public and private health care in Nairobi is poor with only 27% of observed patients with STIs being managed correctly. Quality of care for STIs given by private providers in Uganda is also poor (Jacobs et al., 2004).

The approach, built on the risk factors identified in this study, needs to be tested in other settings with a larger number of patients and different populations, before it can be recommended to others. All the models had a rather low PPV and low specificity, which resulted in unnecessary treatment of many patients. It is the task of policy makers to decide what rate of overtreatment is acceptable; affordable, simple to use and reliable point-of-service tests are preferable.

Risk factors for HIV

Considering that the HIV prevalence in Uganda has decreased to an estimated 7% in the adult population (MOH, 2005), the prevalence rate of 15.2% found in adolescent girls in this study was high. Preliminary findings from the population-based HIV prevalence survey 2004-2005 indicate a prevalence of 3.2% for girls aged 15-19 years old (MOH, 2005). As adolescents who had had at least one sexual intercourse were included, the present results were not entirely comparable to other Ugandan surveys. In the HIV/AIDS Surveillance Report from 2003, the overall pooled HIV prevalence for ANC attendees in the 15-24 year age group was 4.9%, with pooled rates of 6.5% in major towns and 4.1% outside major towns. The prevalence for HIV among first-time visitors for VCT at AIC was 10.3% for females and 2.8% for males (MOH, 2003b).

High HIV prevalence in young women compared to young men could be caused partly by transmission from older partners (Kelly et al., 2003). The age discrepancy as a risk factor for HIV could not be confirmed in the present study. This may be due to reporting bias (age of latest/current partner was recorded) or a too small sample base. Another risk factor explaining the discrepancy in prevalence could be that HIV transmission is more efficient from men to women than from women to men (Carpenter et al., 1999; Glynn et al., 2001). Very young women may have a particularly high-risk due to immaturity of the genital tract (Royce et al., 1997). The median age of first intercourse reported by females and males in the present study, was 16.0 years, similar to the findings in the Uganda Demographic and Health Survey 200-2001 (UBOS, 2001).

The results confirmed previous findings of a strong connection between HIV and other STIs (Cohen, 1998; Ghys et al., 1997; Laga et al., 1993; Wasser-
heit, 1992). The presence of ulcerative and non-ulcerative RTI increases the risk of HIV acquisition and RTI also increases the shedding of HIV virus in infected individuals (Fleming & Wasserheit, 1999; McClelland et al., 2001).

Eight out of 12 women reporting bleeding after intercourse were HIV positive. The direction of the causal relation between HIV infection and postcoital bleeding could not be established although could indicate a high prevalence of ectopia of the cervix, which makes the epithelium more susceptible to infection, and is known to increase HIV shedding (Clemetson et al., 1993; Royce et al., 1997). Bleeding also indicates presence of ulcers in the genital area, but as vaginal speculum examination was not part of the research protocol, this could not be determined. Postcoital vaginal bleeding has been identified as a risk factor for HIV infection among female partners to HIV infected men in Brazil (Guimaraes et al., 1997) and in a study of heterosexual HIV transmission to female partners in New York, USA (Seidlin et al., 1993). Defloration with bleeding has also been suspected to increase susceptibility to HIV infection (Bouvet et al., 1989). In a study in Zambia (Glynn et al., 2001) it was observed that many young women were HIV infected shortly after their first and sometimes only episode of intercourse. This could be consistent with a high-risk of transmission when the hymen is broken. The HIV prevalence was also higher among women reporting a bad smell from the vagina: bacterial vaginosis, which often causes bad smell from the vagina, has been reported to be connected to HIV infection (Gray et al., 1997; Taha et al., 1998) but was not within the scope of this study.

Unemployment and little formal education were also significant risk factors for infection with HIV in females. This confirmed the association between poverty and infection risk and the need for education opportunities for females.

Safe sex behaviour and behavioural change

“Behavioural change” indicates that there is some behaviour that is not accepted and needs to be corrected. However, many young people feel that there is actually no need for behavioural change. If there is a need for behavioural change, adolescence is a suitable time for change, before bad habits are cemented (Cowan, 2002).

The ABC messages were generally perceived as good, but many reasons why they are not always followed were listed. A change in cultural norms has made pre-marital sex more acceptable and virginity is not valued as highly as it used to be. The natural urge to have sex, peer influence and material needs are all factors that make abstinence less likely to be maintained. In the light of these facts, it is worrying to note that the abstinence-only mes-
sages (for women) are dominating Ugandan billboards, whereas, condom promoting advertisements have almost disappeared within the last year. Both the quantitative and qualitative data indicates that in reality fidelity is rather unusual. Individual interviews and FGDs among bodaboda men (motor-bike taxi drivers) in a town in south-western Uganda (Nyanzi et al., 2005) revealed that abstinence is believed to cause severe disease and that manhood is measured by the number of sexual partners. These men said that condom use is cumbersome, expensive and deprives the man of his sexual pleasure. Hence, condoms are used only with casual partners. Condom use in the sample population corresponded to information from national Ugandan data (UBOS, 2001) and had an STI preventive effect. Even so, a substantial number of youths were not using condoms and did not trust that they were protective. It was also a common view that condom use was a sign of distrust.

A focus on individuals rather than the social context is based on the assumption that individuals have total control over their behaviour. However, as Parker highlights, any act of sex involves more than one individual and involves dynamics of interpersonal power (Parker, 2004). Emotional, psychological and physiological factors may overwhelm rational choice making. Some contextual listed factors that negatively influence the ability for the individual to make safe choices are poverty, unemployment, labour migration, rapid urbanization, as well as inadequate health care and gender power differentials. These factors all influence the life of the youth of Kisenyi.

The participants lived in a slum area; an environment characterized by poor housing and sanitation, as well as high unemployment rates for school-dropouts. Alcohol and drug abuse were common and alcohol and substance abuse increases the risk of sexual violence. In a Nairobi slum (Mugisha, 2004), adolescent girls are at increased risk of being forced to have sex if they have consumed alcohol. Boys are more likely to force others into sexual activities under the influence of alcohol. A similar pattern with alcohol consumption as a factor strongly related to coercive sex is also reported from rural Uganda (Koenig et al., 2004). Forced sex was reported by a substantial number of girls in our survey and it was discussed in some FGDs as a problem of daily life. Forced sexual intercourse usually involves no negotiation of condom use and therefore contributes to high HIV and STI risk. Young HIV positive women in Dar es Salaam, Tanzania, are 10 times more likely to have been physically abused, compared to young HIV negative women (Maman et al., 2001).

A young person can be persuaded to have sex by someone older, because of the imbalance in power or due to cultural norms. Social factors contributing to the high HIV risk were poverty and unemployment and these factors relate to sex for survival. The use of sex for financial gain appears common in
both Uganda and in other African settings (Hulton et al., 2000; Nyanzi et al., 2001; Silberschmidt & Rasch, 2001; Wambua et al., 1996). Lack of parental support was another prominent risk factor for these young people. An age difference with 33.5% of girls having a partner at least 5 years older and 14% having a partner more than ten years older implied that this could be a relevant risk factor also in this setting even if the results were unable to show this. In Kenya so called “sugar daddy” relationships were examined through interviews with men. In relationships with age and economy asymmetries it is less likely that condoms are used (Luke, 2005).

Based on the findings in this thesis I argue that the A, B and C are all important ingredients for HIV prevention and agree with those who question whether it is wise to withhold the full and accurate information about how to avoid un-wanted pregnancy and disease until a young person is already sexually active (Cohen, 2004).

VCT for HIV is important to young people. De Cook et al advocate universal voluntary knowledge of HIV serostatus: it should be a public health goal that every African adolescent and adult should know his or her HIV status (De Cock et al., 2003; De Cock et al., 2002). It is argued that the ABC prevention policy ignores the possibility that partners in a sexual relationship can unknowingly have discordant serostatus.

Perceptions of HIV/AIDS and attitudes to VCT for HIV
Young people perceived AIDS as an incurable disease with severe symptoms. They knew how to avoid the infection but perceived the advice about abstinence and safe sex practices as difficult to follow; although, “positive living” with AIDS was considered realistic. Attitudes to HIV testing varied from being prepared to test without any problem, through a multitude of obstacles to being absolutely against HIV testing.

The participants formed their perceptions and attitudes in a sexual context where cultural and religious norms and values co-existed with “modern” western life-style temptations and media influences. There were no simple associations between perceptions and attitudes. Behavioural theory models, for example the Health Belief Model (Rosenstock et al., 1988), have been used to describe and explain how people are influenced to change behaviour. The relevance of such models in predicting sexual behaviour has been questioned because they “assume a logical pattern of decision-making and a degree of control that is unrealistic in the field of sexual relations” (p 36) (Hulton et al., 2000).
An impressive detailed knowledge about HIV transmission and the development into AIDS was revealed in our study, and it is possible the selection of informants influenced this finding. However, some misconceptions about how the infection is transmitted appeared to persist, for example that the infection can be transmitted through washing clothes or ‘romancing’. A recent survey in 19 districts in Uganda (Mukaire, 2004) revealed that although knowledge about HIV/AIDS is high among youth, there are still at least five major misconceptions: HIV could be transmitted through mosquito bites, sharing utensils, sharing toilets, touching an infected person and witchcraft. Less than 50% of youth aged 15-24 years rejected all these misconceptions. The current findings of good knowledge contrasted to a study in Kenya where secondary school youth had little knowledge about HIV and STIs (Ahilberg et al., 2001)

Fear of social rejection was one of the most prominent reasons preventing youth in our study being HIV tested. Stigma was reflected by the mention of different ways to hide that someone had AIDS, and an example was given of what has been termed internalised stigma (Gilmore & Somerville, 1994; Parker R, 2002) This is when fear of HIV/AIDS related stigma and discrimination is so strong that the individual tends to isolate himself from others. Low acceptance of people living with HIV/AIDS is demonstrated from answers to questions about attitudes to these people in the population-based HIV prevalence study 2004-2005. Only 59% of females and 72% of males say they would buy fruit from someone they think is HIV infected. Likewise, only 61% (females) and 65% (males) want HIV infected but not sick female teachers, to be allowed to continue teaching (MOH, 2005).

One motive among some of the youth for accessing VCT was that knowledge about one’s serostatus encourages positive living and future planning. The “positive living” concept was perceived as realistic and this concept has become very important in counselling for HIV testing. The emphasis is not on anti-retroviral drugs, but is more on accessible methods for staying healthy. At the time of the studies, ARV treatment was available only to those who could afford to pay for the necessary tests and treatment, but this is now changing with the introduction of a new government policy (MOH, 2003a). ARV treatment should be offered free at all government hospitals to those who need it. However, shortage of qualified staff and logistic problems make ARV treatment unavailable to the majority of AIDS victims in Uganda.

The young people who were prepared to be tested for HIV claimed that they knew what to do with the result. Assuming they were HIV negative, some said it would motivate them to adopt safer sexual behaviour, with monogamy and condom use listed as the most important components. Assuming
they were HIV positive, they said that they would abstain from sex completely or stay faithful to their partner if s/he was also HIV positive. Nonetheless, some participants expressed their view that partners could not be trusted, even after testing negative and that condom use was the only alternative for protection.

It was a predominant perception that the knowledge of a sero-positive status would cause worries that shortened their lives and that it is better to die without knowing what disease has killed you, a belief also common among adults in South Africa (van Dyk, 2003) and was expressed by a Ugandan woman in an interview study in UK (Beevor & Catalan, 1993). In a study on acceptability of VCT for HIV among adults in a rural area of Uganda (Nuwaha et al., 2002), the death of a sexual partner or symptoms of AIDS were revealed to be the most common motives for HIV testing. These factors were never referred to in this study, suggesting that young people’s motives for VCT are different from the motives of adult persons.

VCT for HIV was not accessible for young people with no income, even when the fee was low such as in the “Youth Corner” at AIC. During the study and for a couple of weeks after, the VCT for HIV was paid for by the research project and many of the participants took the opportunity to use the VCT service. This illustrated that cost was an important obstacle. Time was another limiting factor. Long waiting hours at testing centres due to the large number of young people in relation to the few available counsellors was a barrier and made it impossible for many school-going and working youth to access the service. VCT services need to be increased in order to overcome these obstacles, as the capacity for counselling is much too low, even in urban areas. VCT service to the youth needs to be free as even a low fee prevents many youths, especially the most vulnerable, from participating. School-based VCT sites could help those in school to access the service. Counselling without testing should also be available in places where young people go, such as youth clubs, churches and community centres.

The young men wanting to test for HIV, with few exceptions, perceived themselves to be at risk of the infection; whereas, the young women rarely perceived themselves to be at risk of acquiring HIV through sexual intercourse. This may reflect that the young men actually take more risks or that they are more open about the issue: women may be unable to assess their own risk because it is related to the risk of their partner (Stringer et al., 2004). Another possible interpretation was selection bias: women who suspected that they were HIV positive might have been reluctant to volunteer for the interview or FGD.
The role of gender

The idea that men are natural polygamists is deeply rooted in Uganda. Polygamous unions are very common. One third of all married women have at least one co-wife (UBOS, 2001). The subordinate status of many women in Uganda and other Sub-Saharan countries limits the ability to negotiate safe sex practices and thus makes women vulnerable to STIs and HIV in at least three different ways (Koenig et al., 2004). One is the social acceptance of men’s right to have multiple partners while women are expected to be faithful (Balmer et al., 1995; McGrath et al., 1993). To have faith in a husband could be a risk factor for HIV infection because many women who have been with only one man contract the infection (Mohr, 2004).

A second reason for vulnerability relates to the inability of women in marriage and steady partnership to negotiate condom use (Blanc & Wolff, 2001). The third reason is that many women are unable to negotiate when to have sex (Balmer et al., 1995). Women in East Africa are socialized to believe that decisions about sex is largely a right of men (Koenig et al., 2004).

Silberschmidt highlights the importance of paying more attention to men’s sexual behaviour (Silberschmidt, 2004). She describes the consequences of the changes over the last decades in East Africa with increasing difficulties to keep up male traditional and expected roles as head of household and providers, due to urbanisation and insufficient income. This has resulted in a perception of low social value among men. Multi-partner sexual relationships and sexual violence are used to strengthen masculinity and self-esteem.

In spite of all this, a number of young women in our interviews and discussions claimed that they are no helpless victims but fully capable to take responsibility for their acts. They said they could postpone sex or take initiative to condom use. Further, in reality there seems to be some acceptance that also women have multiple partners in response to economical needs or sexual dissatisfaction (McGrath et al., 1993).

It is a common phenomenon in Uganda that meetings, workshops and other out-reach initiatives for youth are more often attended by males than females. This is probably due to cultural norms that inhibit the girls from participating. It could also be due to the fact that the Luganda word “muvubuka” which means “youth” is perceived by many to include males only. Females are perceived to be either “girls” or “women”.

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Conclusions

The recommendation to abstain from sex was perceived as acceptable by young people and many intended to live by it. Likewise was the idea of sexual fidelity and monogamy attractive to many. However, there were many obstacles to achieving these ideals, among them poverty, the sexual drive, cultural and traditional norms.

Treatable STIs like CT, NG, TV and syphilis were all prevalent. Genital symptoms were also prevalent but there was no association between the symptom AVD and infection with CT or NG. Therefore the national flow-chart for management of the AVD syndrome had low sensitivity, specificity and PPV in the population of adolescent girls.

Risk factors for treatable STIs among adolescent girls were: being out of school, little formal education and unemployment. Reported condom use at latest intercourse had a significantly protective effect.

The HIV prevalence among adolescent girls was much higher than Ugandan national estimations. Risk factors for HIV were unemployment, little formal education, the presence of other STIs, bleeding after intercourse, bad smell from the vagina and the presence of genital ulcers.

The attitude to VCT for HIV was generally positive. Many thought the knowledge of HIV serostatus could help to stay safe or to change a risky behaviour. The obstacles listed were lack of time and money as well as fear to be segregated and mistreated and the belief that knowledge of being HIV infected would shorten someone’s life.

Finally, in spite of all the hardship and hazard that these young people are confronted with in their daily life, many expressed a strong belief in a bright future and a willingness to work hard to reach goals. These goals included helping others and a strong desire to be useful to the family and the country. Education was highly valued by both girls and boys.
Further research and general conclusions

The Adolescent AVD Management Algorithm, which resulted from this research, needs to be evaluated in a larger number of adolescent girls and in a different setting, e.g. in a rural area. Even if this new flow-chart performs better than the present national algorithm, there will be a high degree of over-treatment: simple, reliable and affordable tests for STIs needs to be developed for use in health care facilities without a laboratory.

Biological vulnerability of young females is a possible explanation of the finding that females had a higher prevalence of STIs, including HIV, compared to males. Reporting bias (girls denying and boys exaggerating their promiscuity) could be another explanation. Unemployment was much more common among the adolescent girls compared to boys. Alcohol consumption and the use of illegal drugs were more common among boys. Adolescent boys in spite of lower prevalence of STIs and HIV reported promiscuous behaviour with many sexual partners much more often than the girls.

Young people in Uganda and elsewhere are creative and resourceful. They want to contribute to society and be useful. Given the chance to go to school and find work, they will contribute to economic development and social progress.

Young women are especially vulnerable to STIs including HIV and needs to be provided with knowledge and skills, so that they can express their sexuality without risking their health and life.

Young men, according to findings in these studies, often prefer to adopt safe sex practices, but cultural norms and peer pressure prevent them from doing so. It appears as important to involve young men at an early age, in activities that promote safe sex behaviour.

Given the necessary resources, youth clubs and clinics can make a great contribution to the health and welfare of young Ugandans. In the development of such programs, it is essential that young people of both sexes are involved in planning and implementation. It is necessary to be sensitive to the local needs and to work closely with the community in order to include also young girls.
Acknowledgements

Many people have contributed to this research project. I would like to express my sincere thanks to:

All the youths in Kiswa and Kisenyi who participated in these studies and who shared their views and experiences with me.

All the peer communicators and staff at Kiswa clinic, Muvubuka Agunjuse and the STD clinic at Mulago Hospital, who helped me with all the practical details.

Elisabeth Darj, my first supervisor, friend and co-author, for being available for discussions at all times, encouraging and supportive throughout this project.

Gunilla Lindmark, my second supervisor, for important scientific advice, support and encouragement.

Florence Mirembe, my co-author and head of department of Obstetrics and Gynaecology at Mulago Hospital, for friendship and for sharing her scientific and medical experience.

Fred Kambugu, my co-author and head of department at the STD Clinic at Mulago Hospital, who introduced me to the management of STIs in Uganda.

Tom Tenywa, my co-author and laboratory technician in charge at the STD Clinic, Mulago Hospital, for excellent laboratory work.

Joseph Konde-Lule, my co-author and head of department of epidemiology at the Institute of Public Health, Mulago Hospital, for interesting discussions and scientific support.

Nazarius Mbona Tumwesige, my co-author and lecturer at the Institute of Public Health, for scientific advice, especially in the early stages of the project.
Maurizia Sebugwawo, the nurse at Muvubuka Agunjuse Centre, for many years of friendship, for never giving up even during hard times and for explaining the Ugandan culture to me.

Robert Kiwanuka and Olive Nabisubi, for excellent assistance during the fieldwork.

Barbara van der Pool, for introducing me to the PCR method and for providing reagents.

Pia Olsson, my co-author of the last paper, for helping me to discover the potential of qualitative research methods.

Karin Törnblom, for helping me to sort out the tables and text in the final version and for administrative support throughout the project.

Glynn Lewis, Erin Culbertson, Sue Pajuluoma and Frank Hoyles for linguistic advice on different parts of the thesis.

Mia Haglund Heelas, for friendship and for opening her home to me during the many trips to Uganda.

Staffan Nilsson, for always encouraging me and for providing excellent working conditions at the Centre for Clinical Research, Dalarna.

Ann-Christine Cachrimanidou, my superior at the Department of Obstetrics and Gynaecology in Falun, for rendering support and encouragement.

Ullabella Rödöö, my friend and room mate, who made sure that I could take time off from the clinic for writing the thesis and for the fieldwork

Tomas Riman, my friend and colleague, for reading and commenting on the manuscript.

And, all other colleagues at the Department of Obstetrics and Gynaecology, Falun Hospital, for friendship and for covering for me while I was away.

All my friends at the Centre for Clinical Research, Dalarna, for friendship and assistance, especially:

Maria Pilaawa, for excellent administrative support and for always being there when I needed her.
Marianne Omne-Pontén, for reading and commenting on the manuscript.

Jan Ifver, for helping me to sort out the statistics and to use the SPSS program.

My husband, Bengt Korpås, for love and for encouraging me to start, continue and finalise this project and for doing all the work at home for the last months

My children, Li, Jenny and Nils for support and patience.

I am also grateful to Swedish International Development Co-operation Agency (Sida/SAREC), InDevelop, Smedsby Stiftelse, and the Centre for Clinical Research, Dalarna, for funding this research project.
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