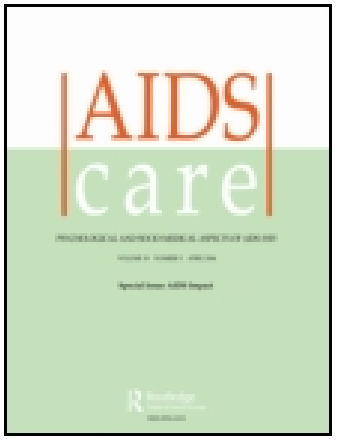

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Vulnerability and risk factors for sexually transmitted infections and HIV among adolescents in Kampala, Uganda

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Vulnerability and risk factors for sexually transmitted infections and HIV among adolescents in Kampala, Uganda

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Abstract

Three hundred and six sexually experienced adolescents participated in a study on sexually transmitted infection (STI) prevalence and associated risk factors. The prevalence of Neisseria gonorrhoea (NG), Chlamydia trachomatis (CT), Trichomonas vaginalis (TV) and syphilis was 4.5%, 9%, 8% and 4% for females and 4.7%, 5.7%, 0% and 2.8% for males. HIV-seropositivity was found in 15.2% of females and 5.8% of males. Structured face-to-face interviews were used to obtain information about social background, sexual experience and genital symptoms. Four focus-group discussions were used in order to validate the interview data. Females were more likely to be infected by the four treatable STIs and HIV, despite risky behavior being more common among males. Unemployment, little formal education, the presence of bacterial STIs and post-coital bleeding or a bad smell from the vagina was highly associated with the risk for HIV in females. The higher prevalence of STIs, including HIV, among adolescent girls cannot be explained by sexual behavior only, as boys reported more risk behavior and were still less affected by STIs. Biological and social factors are definitely of importance.

Introduction

Adolescence is a period of life characterized by curiosity and risk-taking, such as engaging in unprotected sex. A study among university students in Kampala, Uganda, shows a high level of knowledge about the prevention of STIs but this knowledge does not affect sexual practice significantly (Sekirime et al., 2001). Similar findings are reported in a study based on focus-group discussions in Mbale (a district in eastern Uganda) (Hulton et al., 2000). This study indicates that young girls, due to lack of empowerment and access to financial resources, are unable to negotiate safer-sex practices. It also shows that the lack of responsibility perceived by boys for the consequences of their sexual behaviour is another barrier to safe sex. Most studies on knowledge, attitudes and practices do not include any biological markers for STIs. Little is known about HIV prevalence and incidence among Ugandan adolescents. Surveillance data from the Ugandan government provide prevalence rates (STD/AIDS, 2003). Prevalence in the youngest adult age group, 15–19 years old, is considered a proxy for incidence (Williams et al., 2001). Therefore, it is of special interest to study the HIV prevalence in this age group.

In 2002, a study in an urban youth health clinic in Kampala, Uganda established the prevalence of the most common treatable STIs (Råssjö, 2006). The aim of that study was to evaluate the syndromic approach to abnormal vaginal discharge (AVD) syndrome in adolescent girls. Samples were taken for analysis of NG, CT, and TV, using methods. Blood samples were collected for the diagnosis of syphilis. Later, 300 of the blood samples were anonymously tested for HIV antibodies.

In the paper presented here we have described the prevalence of HIV and the social and behavioural factors influencing the risk of contracting STIs including HIV. We also compared social and behavioural characteristics between females and males.

Methods

Three hundred and six consecutive visitors to the youth health clinic in Kisenyi, a slum area in Kampala, participated in an STI prevalence survey in 2002 (Råssjö, 2006). They were sexually experienced adolescents, aged 14–19 years old (199 females and 107 males). Three hundred and four of them had their blood taken for syphilis diagnosis and had either a high vaginal swab (females) or a first

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void urine sample (males) for the diagnosis of NG, CT and TV. Participants with symptoms or signs of any STI were treated according to national guidelines for STI treatment. Questions about socio-demographic conditions, genital symptoms and sexual experience and habits were answered during a structured face-to-face interview.

Shortly after the study, four focus-group discussions were held in order to complement and help validate the survey results and their interpretation. The four groups were staff at the clinic (five participants), participants in the study, separate groups of girls and boys, eight to ten in each group and one mixed group of eight young people, aged 16–24 years, who had not participated in the study. All of the participants had at least primary school education (seven years) except for one street child who had not attended school.

The discussions were facilitated 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. The discussion with staff was held in English. In the youth groups, questions were asked in English and translated into Luganda whenever necessary. The discussion was also sometimes in Luganda and translated immediately into English by the nurse, who was assisting for this purpose. 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). 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, using Determine HIV-1/2 (Abbott) following the manufacturer's instructions.

Data was entered into SPSS for Windows 11.5. Prevalence of treatable STIs, as well as HIV prevalence and associated risk factors, were calculated. A bivariate analysis was conducted involving 2×2 tables, with a positive laboratory result for any of the STIs or HIV acting as the outcome variable. A chi-square test was used to test significance of the results. Odds ratios (OR) and their 95% confidence intervals (CI) were estimated to establish associations where appropriate. Significance of differences between females and males, including social background factors, reported genital symptoms and sexual practices and experiences were tested, using Fisher's exact test and Mann-Whitney's U test (Bohrnstedt, 1988; Glantz, 1987).

Ethical approval was obtained from the Uganda National Council of Science and Technology, from the Ministry of health, Buganda Kingdom and from the Ethics Committee at Uppsala University, Sweden.

Results

Quantitative data

Prevalence of NG, CT, TV and syphilis was 9%, 4.5%, 8% and 4% for females and 5.7%, 4.7%, 0% and 2.8% for males. We found that 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. Thirty of the positive samples were from females, while six were from males, resulting in a prevalence of 15.2% and 5.8%, respectively.

Sexual experience

Eighty-eight percent of the girls and 74% of the boys were sexually active (defined as having had intercourse within the last three months). A new partner within the last three months, as well as more than one partner in the last three months, was more common among boys as was the median number of lifetime sexual partners (Table I).

STI and risk factors

Characteristics, which correlate to the risk for any of the four STIs among girls, are: little education, being out of school and unemployment. Many adolescents

Table I. Sexual experience among adolescents visiting an urban youth health center.

	Females $n=199$ (%)	Males $n=107$ (%)	p-value
Age at first intercourse			
Range	5–19	6–19	
Median	16	16	0.73
New partner last three months	29 (15)	34 (32)	< 0.001
More than 1 partner last three months	17 (8.5)	26 (24)	< 0.001
More than 1 partner last six months	25 (12.5)	38 (35)	< 0.001
Number of lifetime sexual partners			
Range	1–15	1–50	
Median	2	3.00	< 0.001
Sexual partner is more than four years older	95 (48) $n=184$	1 (0.9) $n=90$	< 0.001

live in the city, far away from their families in the village. No more than 10% of the girls and 11% of the boys in this study were living with both parents (Table II). Reported condom use at latest intercourse seemed to have a protective effect (OR = 0.32; 95%CI: 0.13–0.76). Both sexes report a similar rate of infidelity (48% among the girls and 57% among the boys, $p = 0.15$). Few reported that they trusted their partner to be faithful.

For the boys, the only significant risk factor for any of the four STIs was reporting a new sexual partner within the last three months. Self-reported genital symptoms, including AVD, did not correlate to the presence of any of the four treatable infections among girls, while 'pain on passing urine' and 'discharge from the urethra' was associated with STIs among boys (data not presented here).

HIV and risk factors

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 (Table II).

We found no statistically significant correlations (only six cases) between social or behavioural factors and HIV infection among males.

Genital symptoms were present in 87% of HIV-positive girls, while symptoms were present 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 significantly more often by HIV-positive girls. Infection with NG and/or CT among girls was positively correlated to HIV infection (Table III). Five out of six boys with HIV infection reported some kind of genital discomfort. The only significant risk factor found was the self-reported presence of genital sores by three out of six boys. One of the six boys with HIV infection was also infected with CT.

Table IV shows genital symptoms reported by females and males and the relation to STI and HIV.

Eight (27%) of the HIV-positive girls, compared to 24 (14%) of the HIV-negative girls had been HIV tested previously. The difference was not statistically significant. Among the HIV-positive boys, only one had been tested previously. The reasons for abstaining from HIV testing are presented in Table V.

Qualitative data

Risk factors and gender. Poverty was cited by all focus groups as a reason why girls sometimes have sex with older men, called 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 seventies and used to be done in secret:

> 'But now it's on the market like nobody's business. It's too much now.' (The nurse at the youth health clinic).

Poverty and material-needs explain why young girls would expose themselves to such risks:

> 'These girls come from home without anything in their stomach. They reach at school. Sometimes, even at school they don't have money to buy something. So in the evening, going back from school they can find someone (who says): "Hey, let me give you something"—you understand? Some guys now they have cars. They say: "Let me just take you out for lunch", and the girl is forced to go because she wants to get something.' (Adolescent boy).

Table II. Social background factors for adolescent visitors to an urban youth health center.

Social background factor	Females $n = 199$ (%)	Males $n = 107$ (%)	p-value
Unemployed	79 (40)	15 (14)	< 0.001
In school	84 (42)	50 (47)	0.47
Living with both parents	20 (10)	12 (11)	0.84
Drank alcohol last week	23 (12)	25 (23)	0.008
Tobacco smoker	3 (1.5)	12 (11)	< 0.001
Has ever used drugs	2 (1)	16 (15)	< 0.001
Married monogamous	36 (18)	8 (7.5)	0.01
Married polygamous	9 (4.5)	0	0.03
Steady partner for more than one year	70 (35)	22 (21)	0.009
Steady partner for less than one year	32 (16)	20 (19)	0.63
No steady partner	52 (26)	55 (51)	< 0.001

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

	HIV-positive $n=30$ (% of HIV-positive)	HIV-negative $n=167$ (% of HIV-negative)	OR	95% CI
Abnormal vaginal discharge	22 (73)	92 (56)	2.2	0.9–5.2
Bad smell from vagina	18 (60)	60 (36)	2.6	1.2–5.9
Genital sores	16 (53)	53 (32)	2.4	1.1–5.3
Genital itching	20 (67)	82 (50)	2	0.9–4.5
Bleeding after intercourse	8 (27)	4 (2.4)	14.8	4.1–53.3
Any of the four STIs	14 (47)	27 (16)	4.5	2–10.4
NG or CT	8 (27)	15 (9)	3.7	1.4–9.6
TV	5 (17)	11 (7)	2.8	0.9–8.8
Syphilis	3 (10)	5 (3)	2.5	0.6–10.4

According to the participants of the focus group discussions, girls who drop out of school are at risk of becoming pregnant. Parents tend to send their daughters away to stay with relatives if they drop out of school. It is not socially acceptable for a girl to get pregnant while she is still at home. The situation for a girl who becomes pregnant when she is in school is even worse. She will have to leave school and sometimes the parents will send her away from home:

> 'You go! We don't want to stay with you any longer. So she will have to stay with the boy who impregnated her. If he is also poor you will find them on the streets.' (Adolescent girl).

Alcohol use and tobacco smoking, which have been found to be risk factors for HIV infection in adolescent girls, were more common among boys. In the focus groups, the youth 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).

According to the focus group discussions, smoking is generally rare among women, especially young women. In all focus-group discussions, participants claimed that 'unfaithfulness', in the meaning of having concurrent sexual relations, is common and that boys and girls have different reasons for having sex with more than one person. Both boys and girls brought up the issue of gifts and money in exchange for sex, not only within the sugar daddy phenomenon. For boys it is a 'virtue' to have more than one partner but it is not socially accepted for girls. As one boy put it:

> 'And another point is that for us here in Uganda, polygamy is not an issue. For us here, the men, we know we have the right to be with more than one wife or a girlfriend. . .But when I find my girlfriend or a girl lover with another friend of mine, that's a problem.'

Table IV. Genital symptoms reported by females and males and relation to infection with NG and/or CT, TV, syphilis and HIV.

Symptom	Frequency	CT and/or NG	TV	Syphilis	HIV
Females	$n=199$(%)				
Any genital symptom	154 (77.4)				
Spotting	21 (10.5)	1	4	2	5
Bleeding after intercourse	12 (6)	2	2	0	8
Abnormal vaginal discharge	115 (57.8)	14	9	3	22
Bad smell from the vagina	78 (39.2)	11	7	3	18
Itching of the private parts	104 (52.3)	15	6	4	20
Pain on passing urine	62 (31.1)	9	4	3	13
Pain during intercourse	67 (33.7)	7	4	4	9
Genital sores	69 (35.2)	9	2	6	16
No symptoms	45 (22.6)	2	7	0	4
Males	$n=101$ (6 no response)				
Any genital symptom	45 (42.1)				
Urethral discharge	16 (15.8)	8	0	1	1
Pain on passing urine	35 (32.7)	8	0	2	1
Genital sores	18 (16.8)	2	0	1	3
No symptoms	56 (52.3)	1	0	0	1

Table V. Reason to abstain from HIV test.

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

In one group, someone mentioned the fact that families no longer choose spouses; now it is a decision left to the individual. Therefore the relation has to be tested before you get married. The following conversation between a boy and a girl may illustrate this:

'Me, I support cheating.'

'What?'

'I support it. That's the way to find the right girlfriend to be with in your future. So you can't be fixed to just one girlfriend. You've got to take chances.'

The attitude towards condoms was discussed during the focus groups. To put on a condom can be a way to show that you really love somebody. Condoms should be used in the beginning of a relationship, but after some time:

> 'They used to abandon it and then they go live.' (Adolescent boy).

Low education was mentioned in the focus groups as an obstacle to condom use. By some people, condom use is considered to promote prostitution and in marriage it is often seen as a sign of distrust to suggest condom use. The issue of voluntary counseling and testing for HIV was discussed in the focus groups. Inability to cope with the knowledge of being HIV-infected was one of many reasons mentioned for abstaining from an HIV test:

> 'Let me give you an example: After testing they will bring my results and I am positive. I decide to kill myself because I will be feeling alone.' (Adolescent girl).

The health workers felt that voluntary counseling and testing would benefit the youth and help them practice safe sex. Adequate information could encourage the youth 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).

Discussion

STIs and HIV affected more adolescent girls than boys of the same age. The female-to-male ratio for HIV infection has been reported to be as high as 3:1 in the 15–24 year old age group (STD/AIDS, 2003). Considering that the HIV prevalence in Uganda has decreased to an estimated 6.1% during the last decade, the prevalence rate of 15.2% found in adolescent girls in this study is high. Most reports on HIV prevalence differentiate between children and adults but adolescents are included with adults.

As our study included adolescents who had had at least one sexual intercourse, our results are not entirely comparable to other Ugandan surveys, such as the Uganda Demographic and Health Survey (UDHS) (Ugandan Bureau of Statistics, 2001). Still, the median age of first intercourse reported by girls in our study, at 16 years, is similar to the findings in the UDHS. There is also a striking similarity in the reporting of more partners and higher alcohol consumption by the males.

The discrepancy in infection rate between females and males can be due to social, behavioral or biological factors. Girls who are out of school, especially those who are unemployed, are the most vulnerable group. This has also been shown in Addis Ababa (Taffa et al., 2002). It is interesting to note that most risk behaviors, like having multiple partners or using alcohol, were reported more often among the young men in our study; yet they were less affected by STIs. A study based on qualitative data from focus groups with adolescent boys in rural Kenya reveals that boys tend to conform to social norms that prescribe more than one sexual partner (Nzioka, 2001). Our findings of sexual risk behavior patterns are also very similar to the findings in Dar es Salaam, where sex-specific sexual behavior among youth clinic visitors was investigated (Mwakagile et al., 2001; Silberschmidt & Rasch, 2001). The unemployment rate in Kisenyi was found to be almost three times as high for girls than for boys. Many of these girls have no other means of support, apart from what they can get from negotiating with men. Our focus-group discussions revealed that this habit of exchanging money or gifts for sexual favors

seems to be quite common. Others in Uganda and from other parts of Africa have previously described this phenomenon (Nyanzi et al., 2001; Silberschmidt & Rasch, 2001). These transactions are by no means looked upon as prostitution. It is believed that sexual services should be paid for; otherwise the woman has no self-respect. This creates a situation where girls can have several sexual contacts.

The answers in the questionnaire about number of sexual partners and about being faithful seemed inconsistent to us. For example, some of the girls had answered 'one partner' to the question about number of lifetime partners, but a few questions later they would answer 'yes' to being unfaithful to her partner. By using focus group discussions with some of the participants we found out that Ugandan girls are supposed to have had only one sexual partner (if any) before marriage, but that it is common to have sex in exchange for money or gifts. Such encounters are not described as 'having a sexual partner.'The females in our study reported that their partner was older more often than males did. We were not able to show that an older partner was correlated to a higher STI risk but this factor is suspected by others to explain the difference of STI prevalence in females and males (Mwakagile et al., 2001).

Smoking is still a rare habit among young women in Uganda. Although the number of smoking girls in our study was very small (three), it was a striking finding that two of these girls were HIV-positive. Drinking alcohol, which is somehow more socially accepted for a young woman, was also associated to an increased infection rate, probably due to higher risk-taking under the influence of alcohol. The association between alcohol and HIV infection has been demonstrated among adults in rural Uganda (Mbulaiteye et al., 2000).

In this study, we tested for only four STIs among a relatively small number of self-selected patients. However, our results confirm previous findings that there is a strong connection between HIV and other STIs (Cohen, 1998; Ghys et al., 1997; Laga et al., 1993; Wasserheit, 1992). The presence of ulcerative and non-ulcerative reproductive tract infection (RTI) increases the risk of HIV acquisition. RTI also increases the shedding of HIV virus in infected individuals (Fleming & Wasserheit, 1999; McClelland et al., 2001). Eight out of 12 women who reported bleeding after intercourse were HIV-positive. The direction of the casual relation between HIV infection and post-coital bleeding could not be established from our data. The finding could indicate a high prevalence of ectopia of the cervix, which makes the epithelium more susceptible to infection. Bleeding could also indicate presence of ulcers in the genital area but, as vaginal speculum examination was not part of the research protocol, we do not know if this was the case. Post-coital 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). High HIV prevalence was found among women who reported 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).

The findings in this study show that adolescent girls need support in terms of life-skills training, help to develop self-esteem and negotiation skills as well as education and economic empowerment. Young men also need to receive reproductive health information to make them aware of their responsibilities in order to prevent unwanted pregnancy and STIs. Youth friendly services for counseling and treatment should be easily accessible for all adolescents, especially those who are out of school.

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