Sexual & Reproductive Healthcare 1 (2010) 111–115

Contents lists available at ScienceDirect

Sexual & Reproductive Healthcare

journal homepage: www.srhcjournal.org

STI-prevalence and differences in social background and sexual behavior among urban and rural young women in Uganda

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ARTICLE INFO

Article history:
Received 6 January 2010
Revised 22 February 2010
Accepted 23 March 2010

Keywords:
Adolescents
Sexual behavior
Urban
Rural
STI
HIV

ABSTRACT

Background: Adolescents in Uganda carry a heavy burden of reproductive health problems. Different environment creates different problems.
Objectives: To study the prevalence of STI and to compare social and behavioral risk factors for Neisseria gonorrhoea (NG) and Chlamydia trachomatis (CT) among sexually experienced young women in one urban and one rural area in Uganda.
Methods: Consenting, sexually experienced women, below 20 years, visiting two different youth clinics were asked about social background, genital symptoms and sexual experiences. Vaginal samples were taken for NG and CT and analyzed by PCR.
Results: The prevalence of NG and/or CT was 20 (6.8%) in the urban and 23 (7.8%) in the rural study site, a non-significant difference. The rural women were often in marital union, 25.3% compared to 12.2% of the urban women (OR 2.4, 95% CI 1.6-3.8) and had experienced more pregnancies and had more children. Their partners were often more than 10 years older. More urban women (42.2%) knew their HIV status compared to rural women (16.2%), OR 2.1 (1.6–2.7), reported more condom use and more sexual partners.
Conclusions: Marital status and few sexual partners does not appear to protect young rural women from sexually transmitted infections (STIs), implying that male sexual behavior may have an important impact on women's risk to be infected.

Introduction

In the shadow of HIV/AIDS, with an estimated incidence of 2.7 million new cases every year [1], 340 million persons are infected annually with a variety of curable sexually transmitted infections (STIs) [2]. Young people are more at risk to catch a STI and also more vulnerable to the consequences such as infertility, miscarriages, tubal pregnancy associated with maternal mortality, as well as pelvic inflammatory disease (PID) and chronic pelvic pain [3]. Early marriage, with early sexual debut, sexual child abuse, the sugar daddy phenomenon, other forms of transactional sex and low negotiation skills to accept or deny sexual activity, multiple partners and low or no access to condoms are factors that may increase the risk of getting a STI [4].

Furthermore STIs may enhance HIV transmission, and the transmission of HPV increases the risk of developing cervical cancer [5,6]. The UN Millennium Development Goals emphasize gender equity, empowerment of women, reducing maternal death and combat HIV/AIDS and other diseases. Eighty percent of the STIs are estimated to affect people in developing world especially in the Sub-Saharan countries [7]. Adolescents may carry a heavy burden of disease mainly from STIs including HIV and unwanted pregnancy. There are initiatives to meet the need for reproductive health services among adolescents, but clinics and facilities are few and the service may be inaccessible to those who need it most. Adolescents experiencing different socio-economic contexts, like living in an urban or rural environment might have different patterns of health seeking behavior and different patterns of disease and therefore different reproductive health needs and concerns. Previous studies in a slum area of Kampala have shown the prevalence of Neisseria gonorrhoea (NG) to be 9% among adolescent girls and 5.7% among adolescent boys. Chlamydia trachomatis (CT) was found in 4.5% of the girls and 4.7% in the boys [8]. In Africa, as in other parts of the world, people are migrating between areas, e.g. into cities from rural parts of the country [9], which lead to changes of traditions and social behavior. Are young people who live in urban areas more at risk, because of a more affluent life style or are the girls in rural districts, who are less educated and getting married earlier, more at risk? The purpose of this study was to assess the prevalence of different STI and to compare social and behavioral risk factors for Neisseria

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doi:10.1016/j.srhc.2010.03.001

gonorrhoea (NG) and Chlamydia trachomatis (CT) among sexually experienced young women in one urban and one rural area in Uganda.

Methods

This was a quantitative cross-sectional prospective study. Data collection started in November 2006 and was completed in November 2007. Six hundred and ninety-four teenage girls were consecutively invited to participate. Risk factors for STIs were compared between young women visiting a youth centre in central Kampala or a youth centre 18 km outside the city.The urban study site is located in a densely populated slum area with small industries for metal recycling, market places and bars. The rural study site is located near a small trading centre on the highway towards the south-western parts of Uganda. The area is lacking industries and most people are subsistence farmers. In both study sites clients are offered counselling, family planning, and treatment for STIs. HIV-testing was not part of the study protocol, but because all young people should have a right to know their HIV status, they were offered counseling and testing whenever possible. HIV testing kits were not available at the clinics at all times during the study period.

Inclusion criteria for the study were women below 20 years, visiting one of the two youth centres, sexually experienced with vaginal sexual intercourse at least once and who consented to participate. After receiving written and oral information, the girls were interviewed by a social worker at the clinic. A structured, pre-tested questionnaire was used. Questions covered social background, sexual experience and behavior and genital symptoms. Interviews were conducted in English and Luganda, the most common languages spoken in the study areas. Participants were examined by a midwife who took their history, examined them, took a vaginal sample for detection of NG and CT and decided on treatment where there was need. A blood-sample was collected from those who accepted HIV-testing. A step-by-step protocol was followed and filled in by the midwife. The vaginal samples were sent on a daily basis to the STD clinic in Mulago Hospital where they were analyzed by a PCR method, which has been described previously [8].

Statistics

Data is analyzed by SPSS 15.0 for Windows.

Ethical clearance

The study was approved by Ugandan National Council for Science and Technology.

Results

Of the included 694 girls, 36 in the urban and 57 in the rural site abstained from participation.

The major reasons were being in their menstrual period, fearing the sampling procedure, too shy to be examined or just did not want to participate. Among the excluded there were three young women who had extensive genital sores and the midwife did not want to do the sampling, as it could be too painful. Additional exclusions were two samples as they were considered indeterminable in the PCR analysis and seven more women were excluded because they were 20 years old. Remaining for the study were 296 women in each study site. The included 592 women, with an average age of 17, 7 years were finally analyzed.

Social background

The main difference in social situation between urban and rural women was that more of the rural women were in marital union, 25.3% compared to 12.2% of the urban women (OR 2.4, 95% CI 1.6–3.8). More women reported staying with their parents in the urban area (OR 1.5, 95% CI 1.2–2.0), where early marriage was less common than in the rural study area. Polygamous marriages were comparatively rare in the urban site: 1.4% compared to 6.1% in the rural site.

The frequency of schooling was similar in the groups, but 24.3% of the women in the urban site compared to 4.1% in the rural site were college/university students (OR 3.8, 95% CI 1.8–8.1). Self-employment was more often reported by the urban women, 29.1% compared to 14.0% among the rural young women (OR 1.7, 95% CI 1.1–2.4).

Employment rate was not statistically different between the two groups.

Smoking was reported by 2.4% of the urban women compared to less than 1% of the rural women.

Drinking alcohol at any time during the last week was reported by 29.1% of the urban compared to 17.5% of the rural women (OR 1.4, 95% CI 1.1–1.8). Table 1.

Prevalence of STI and knowledge of HIV status

The prevalence of NG and/or CT was 6.8% in the urban and 7.8% in the rural study site, a non-significant difference. More young women, in the urban site, 42.2%, knew their HIV status compared to the women in the rural site, 16.2%, OR 2.1 (1.6–2.7). The reasons given for not previously being tested for HIV are presented in Table 2. The most common reason given by the urban girls was fear of the result, whereas not knowing where to go for a test was most common among the rural women. Among ‘‘other reasons”, lack of time or that she just never thought about it, were the most common explanations given. In the urban clinic 150 women were tested for HIV and 12.0% were found to be positive. In the rural clinic 90 were tested and 13.3% among those were HIV positive. The prevalence of HIV infection was increasing with age: 9.7% of the 16 years old young women and 16.9% of the 19 years old women were HIV positive.

Genital symptoms

A list of possible genital symptoms was presented to the young women and they were asked to indicate what symptoms they had, if any. Abnormal vaginal discharge (AVD) was the most prevalent symptom, indicated by 74.8% in the urban and 84.4% in the rural clinic (OR 1.8, 95% CI 1.2–2.7). Genital itching was indicated by 69.0% in the urban and 79.9.1% in the rural clinic (OR 1.8, CI 1.2–2.6). More women in the urban group 26.9% compared to the rural group 16.9% complained they had genital sores (OR 1.4, CI 1.1–1.7). The women were asked if their present or most recent partner was complaining of any genital symptoms. The prevalence of a symptomatic partner was 15.7% in the urban and 18.5% in the rural study site, without any statistical significant difference. 4.1% of the urban women compared to 9.5% of the rural women had an ongoing pregnancy at the time of attending the clinic (OR 2.4, 95% CI 1.2–4.9). Among the urban women 31.7% had been pregnant compared to 40.4% of the rural young women (OR 1.4, 95% CI 1.0–2.0). The urban women reported altogether 134 pregnancies resulting in 90 living children whereas the rural women reported 188 pregnancies and 161 living children. There were no significant differences between the groups concerning symptoms as bleeding disorders, bad smell from vagina, pain or ever experienced genital sores. One in five of the urban and two thirds of the rural women reported that they had other problems, apart from genital symptoms, like fever, malaria or skin problems, as a reason to come to the centre.

Table 1
Social background factors of the participating women.

	Urban clinic $N = 296$	Rural clinic $N = 296$	Odds ratio (OR) with 95% confidence interval (CI)
Mean age	17.7 years	17.7 years	NS
Age range	12–19	14–19	NS
Religion			
Protestant	34.7%	26.8%	NS
Catholic	35.3%	35.6%	NS
Muslim	16.8%	23.8%	NS
Other	13.2%	13.8%	NS
Education			
In school	49.8%	50.8%	NS
Finished school before entering secondary school (among those not in school)	42.4%	42.4%	NS
Employment (among those not in school)	n = 143	n =151	
Unemployed	41.3%	50.3%	NS
Employed	29.4%	35.8%	NS
Self employed	29.4%	13.9%	NS
Who is she staying with?			
Both parents	29.3%	15.9%	OR 1.5 (1.2-2.0)
Single parent	18.3%	22.0%	NS
Sister or brother	15.3%	9.8%	NS
Guardian or grandparents	15.3%	19.9%	NS
Husband/partner	10.3%	25.3%	NS
Friend	5.3%	4.7%	NS
Alone	6.0%	2.4%	NS
Civil status			
Monogamous married	10.8%	19.2%	NS
Polygamous married	1.4%	6.1%	NS
Married mono or polygamous	12.2%	25.3%	OR 2.4 (1.6–3.8)
Divorced	3.0%	0.3%	NS
Widow	1.0%	0.3%	NS
Smoking and drinking habits			
Smoking cigarettes	2.3%	0.3%	NS
Drank alcohol last week	29.1%	17.5%	OR 1.4 (1.1–1.8)

Table 2
Reasons to abstain from HIV-testing, more than one alternative could be given.

Reason given for abstaining from HIV-testing (more than one alternative could be given)	Urban clinic $N = 170\%$ (n)	Rural clinic $N = 249\%$ (n)	OR (95% CI)
She thinks there is no risk she is infected	11.4 (19)	10.8 (27)	NS
She can not afford the test	24.1 (40)	21.3 (53)	NS
She does not know where to go for the test	18.7 (31)	35.7 (89)	OR 2.4 (1.5–3.9)
She would fear the result	32.5 (54)	22.9 (57)	OR 1.2 (1.0–1.5)
Her partner does not want her to	6.0 (10)	1.2 (3)	NS
Other reason	19.8 (33)	16.1 (40)	NS

Sexual behavior

The age for sexual debut was similar in the two groups with 60% being sexually experienced before the age of 16. The urban women more often reported a new sexual partner within the last 3 months, 27.6% urban versus 17.5% rural young women, OR 1.4, 95% CI 1.1–1.7). The number of sexual partners the last 3 months varied from zero to four in both groups. 30.6% of the urban women compared to 22.6% of the rural women said they had more than one sexual partner within the last 6 months (OR 1.2, 95% CI 1.0–1.5). The number of lifetime partners reported by the urban women varied from 1 to 20, and from 1 to 7 among the rural women. Half of the participants in both study sites reported less than three lifetime partners. The current or latest partner was typically older than the women. Among the urban women, 27.8% reported, and 37% of the rural women reported ever having had a sexual partner who was more than 10 years older (OR 1.5, 95% CI 1.0–2.1).

The use of contraception at first and most recent sexual intercourse is presented in Table 3. 59.3% of the urban and 45.1% of the rural women reported condom use at their first sexual intercourse (OR 1.4, 95% CI 1.2–1.6). Reported condom use dropped from first to most recent intercourse to 33.9% in the urban and 13.2% in the rural site (OR 2.1, 95% CI 1.6–2.7). 28.5% of the urban and 28.6% of the rural women reported no contraceptive use at all for the first intercourse. For the latest intercourse 42.1% urban and 56.8% rural women reported that no contraceptive method at all was used. 21.6% of the urban and 6.1% of the rural women claimed that they constantly used condoms for protection (OR 2.5, 95% CI 1.6–3.8). Condom use was generally much less frequent among those who were married. Only 19% of the married urban women and 4% of the married rural women reported that they had used a condom at latest intercourse. Rural women were using less safe protection compared to urban women, with a statistical significant difference, at the first intercourse, safe periods ($p = 0.009$) and at the most recent intercourse, safe periods ($p = 0.002$) (calculated by Fischer's exact test).

More urban than rural women, 35.8% versus 25.8%, admitted that they had been sexually unfaithful to their current or latest partner. Only 21.2% of the urban and 18% of the rural women said they trusted their partner.

Sexual harassment was prevalent in both study sites: 24.6% in the urban and 18.3% in the rural site. Sexual violence also appeared to be common in both study sites. In the urban site 35.8% and in the rural site 40.1% reported that they had been forced by their partner or someone they knew to have sex. In nine cases only, five in the urban and four in the rural site the perpetrator was an unknown person. The experience of sexual harassment and coercive sex is displayed in Table 4.

18.3% urban and 31.4% rural women said that they had received money or gifts in exchange for sex (OR 2.0, 95% CI 1.4–3.0). Approximately 10% of the women in each study site found some of the questions embarrassing.

Discussion

The prevalence of NG and CT was, in comparison to other studies, high in this study of young women. It was within the range of what has been observed in high-risk populations like adult STI-

Table 3
Contraception use for first and most recent intercourse as reported by sexually experienced women below 20 years.

	Urban clinic first intercourse $N = 296\%$ (n)	Urban clinic most recent intercourse $N = 296\%$ (n)	Rural clinic first intercourse $N = 296\%$ (n)	Rural clinic most recent intercourse $N = 296\%$ (n)
Withdrawal	6.4 (19)	4.7 (14)	3.8 (11)	6.1 (18)
Safe period	1.7 (5)	0.7 (2)	6.1 (18)	5.1 (15)
Condom	59.3 (175)	33.9 (100)	45.1 (134)	13.2 (39)
Pill	4.1 (12)	10.2 (30)	5.7 (17)	13.2 (35)
Depo Provera inj	0	2.4 (7)	0.7 (2)	7.1 (21)
Nothing	28.5 (84)	42.1 (142)	28.6 (85)	56.8 (168)
Always use a condoms		21.6 (64)		6.1 (18)

Table 4
Experiencing sexual harassment and forced intercourse reported by women below 20 years.

	Urban clinic $N = 296\%$ (n)	Rural clinic $N = 296\%$ (n)	OR (95% CI)
Sexual harassment	23.3 (69)	18.5 (54)	NS
Forced to have sex by a steady partner	24.7 (73)	26.0 (77)	NS
Forced to have sex by a known person	9.3 (27)	13.9 (41)	NS
Forced to have sex by an unknown person	1.7 (5)	1.7 (5)	NS
Was never forced to have sex	64.3 (187)	58.8 (174)	NS

clinic attendees in Nairobi [10], adult family planning clients in Dar-es-Salaam [11], women attending a rural antenatal clinic in Tanzania [12], but higher than in the Ugandan population-based prevalence study in Rakai district with 1.5% positive for NG and 2.1% for CT [13]. Most studies on STI prevalence in adolescents refer to reported symptoms and not microbiological markers. In a similar study as ours from Nigeria, the prevalence of NG and CT was 1.9% and 2.2% among sexually experienced schoolgirls aged 14–19 years, and 2.0% and 0% among those who did not attend school [14].

The prevalence of NG and CT did not differ significantly between the study sites, although the living conditions an environment were different in several ways. Being married and having few sexual partners did not protect the women in the rural area from STIs.

The rural women admitted to have received money in exchange for sex more often than the urban participants. Nyanzi et al. describe the role of money in the negotiation for sex among adolescents in south-western Uganda and describes the exchange of sex for money and gifts as a normal aspect of sexual relationships [15]. There is reason to believe that this habit exposes women to sexual intercourse where their ability to negotiate condom use is reduced. Furthermore, many of the participating women, 36–40%, had experienced coercive sex, mostly by their partner. These findings are similar compared to a study in Rakai in southwestern Uganda, where it was noted that coercive sex was common within partnerships and especially common if the woman was younger [16]. The high reported incidence of forced sex, especially with a regular partner, implies that women often are powerless when it comes to decisions about sexual behavior. The implication of this in combination with the low prevalence of condom use is that these young women are exposed to high risks of STIs including HIV and unwanted pregnancy. This situation can only change through behavioral change.

The prevalence of HIV in our study was higher than expected in each group and increased by age, with an alarming prevalence of almost 17% in 19 year old young women. This is much higher than the prevalence of HIV among young people in Uganda according to the UNGASS Uganda Report 2007 to UNAIDS [17], where the prevalence among women age 15–19 years was 2.6%. In the present study, for different reasons many women were not HIV tested. In a previous study of STI and HIV prevalence among women aged 15–19 years in Kampala the HIV prevalence in anonymously tested samples was 15.2%. It was observed that the risk to be HIV positive was not significantly higher among those who had never done a HIV test compared to those who were previously tested [18]. However since then, the anti-retroviral (ARV) treatment has become more accessible also in developing countries and it is possible that women who perceive themselves to be at risk would be more willing to test for HIV.

The reported use of modern contraception was higher in the urban clinic, especially the use of condoms. The rural women had more often experienced less safe methods like "safe days", especially when they had their first intercourse. The low rate of condom use among the rural women may be due to their higher rate of marriage. Condom use appears to be less accepted among married couples and in long term relationships as it is seen as a sign of distrust to use them [19]. There was generally a lower reported use of condoms for latest compared to first intercourse and the proportion of women who reported no contraception at all almost doubled from first to most recent sexual intercourse. This implies that contraception may be accepted at the beginning of a relationship, but not later. The 592 young women reported all together 322 pregnancies and 251 living children. Sometimes the pregnancy had resulted in an abortion. We did not try to find out whether spontaneous or induced, while induced abortion is illegal in Uganda, but the death of the child was also a common experience.

Although the rural women often had other reasons to come to the clinic than genital problems, they reported a very high number of genital symptoms when asked. Maybe these young women need to have another reason before they can get away from housework and other duties before they can seek help for their reproductive health problems. It is important that health workers bring up questions about such issues that can be taboo to talk about [20].

This study has the limitation of self-selected participants. The most vulnerable young women, who are not in a position to decide for themselves if and when to go to a clinic, may not be represented. The results should therefore be interpreted with caution. Another limitation is that reliability of information about sexual experiences and self-reported sexual behavior can be questioned. People may wish to present a less risky behavior or a socially more acceptable behavior to the interviewer [21].

The rural site in this study is located only 18 km from the city of Kampala and not far from one of the major high ways. This means that young people in this area probably have better access to information and health care, than their peers in more remote areas. Still the differences observed in living conditions between the two study groups are significant and would probably have been more pronounced if a more remote site had been chosen.

We conclude that adolescents in urban and rural areas of Uganda have high prevalence of STIs including HIV. The findings in this study may imply that male sexual behavior has a big impact on women's risk to be infected and therefore needs to change. The control of STIs remains a priority for WHO. The authors support the global strategy to prevent and control STI [2]. This strategy includes a number of interventions: Factors concerning adolescents such as promoting safer sex practices and improving the access of affordable condoms, youth friendly services for adolescents with high risk sexual behavior and voluntary counseling and STI and HIV testing, as well as proper treatment and treatment of partners. The strategy also needs involvement of all relevant stakeholders, including the community and the private sector, in the prevention and care of STIs.

Disclosure statement

None of the authors declare any conflict of interest.

Acknowledgements

We thank the staff of the two participating youth clinics for their dedicated work. We also thank all the young women, who so generously shared their experiences with us, and we thank the Ministry of Health, Buganda Kingdom for their interest in the work.

Role of the funding source: SIDA (SWE-2001-356), InDevelop and the Centre of Clinical Research have contributed with financial support for this study. None of them have participated in designing, writing, analyzing or interpreting the study or the results.

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