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Sexual Health, Reproduction Intentions, and HIV Knowledge among Primary and Secondary Students in Northern Uganda: A Cross Sectional Study

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Abstract

Background: Unintended pregnancies and HIV/AIDS prevention and response remain significant health challenges throughout Uganda, especially among adolescents who have limited access to comprehensive sexual health education. This study aimed to evaluate youth attitudes towards and knowledge of safe sex practices, pregnancy intentions, and prevention of HIV amongst students in the Lango region of northern Uganda.

Methods: A cross-sectional study was conducted in June 2018 among 242 primary and secondary school students (147 female and 95 male) from 19 schools in Oyam, Uganda. Female participants were oversampled due to specific research interest in the knowledge and attitudes of girls who are most at risk of becoming pregnant and/or HIV positive during adolescence and young adulthood. The structured interviewer-administered questionnaire contained sections on demographic characteristics, self-esteem, and knowledge and beliefs. Descriptive statistics were used to summarize the sociodemographic characteristics of participants and a nominal logistic regression model was used to determine variables that influenced outcomes of interest.

Results: The majority of students understood that condoms are an effective way to prevent pregnancy (89.8%). The vast majority of students indicated that they wanted 5 or less children and nearly 70% indicated that their preference was to have children after 23 years of age. 82.1% of participants did not believe HIV is treatable. Over half of participants indicated they would not be at all embarrassed to tell their families if they were to get HIV (53.35%), but 30% indicated that they would not be friends with a HIV positive individual. Accurate knowledge of HIV transmission was significantly related to likelihood that they would be friends with an HIV positive individual.

Conclusions: The survey results point to a large gap between reproductive intentions and results and, while participants correctly identified sex with an infected individual as a means of HIV transmission, over 80% did not believe HIV is treatable. The lack of knowledge among the study population about HIV treatment is highly problematic given that treatment is linked to longer, healthier lives, prevention of mother-to-child transmission, and reduced risk of transmission to sexual partners.

Plain English Summary: Despite many national and international campaigns, millions of Ugandans continue to suffer from HIV/AIDS in Uganda. Many new cases of HIV are among young people, especially teenage girls who are almost twice as likely as teenage boys to become infected by HIV before they are 20 years old. There is a lack of data on the knowledge and attitudes of Ugandan youth about sexual health and HIV prevention because it is not considered culturally appropriate to talk about sex with young people. This study aimed to evaluate youth knowledge of pregnancy and HIV prevention in order to inform community-based programming in the region. A survey was administered to teenage students in Oyam, northern Uganda and the data collected was analyzed to see what factors determined whether students knew about pregnancy and HIV prevention and how this knowledge influenced how they treated HIV positive people. The study results showed a major gap between young people's reproductive intentions and what is happening in their community. For example, most youth indicated they wanted to be at least 26 years old

before they had their first child, while the average age of first birth in the area in 18. While participants correctly identified sex with an infected individual as a means of HIV transmission, over 80% did not believe HIV is treatable. The lack of knowledge among the study population about HIV treatment is problematic given that treatment is linked to longer, healthier lives, prevention of mother-to-child transmission, and reduced risk of transmission to sexual partners. Moreover, youth with lower levels of knowledge about HIV prevention and treatment were more likely to say they would not be friends with HIV positive individuals. The study showed that girls and boys have the same level of misinformation about pregnancy prevention and HIV transmission, however, the consequences are far greater for young women who are more heavily impacted. Consequently, young women in particular need programs that increase their knowledge and empower them to protect themselves from unwanted sex, unintended pregnancies, and STD transmission.

Keywords: Adolescent health; Reproductive health; HIV-AIDS; STDs

Abbreviations: ART: Antiretroviral Therapy; GHNU: Global Health Network Uganda; HIV/AIDs: Human Immunodeficiency Virus; RUFC: Ray United FC; STDs: Sexually Transmitted Diseases; STI: Sexually Transmitted Infections; UNICEF: United Nations Children's Fund

Introduction/ Background

Despite the large influx of international funding and health programming aimed at HIV/AIDS prevention and response in Uganda, HIV remains a significant health challenge, particularly for communities in northern Uganda. In 2018, Uganda received 371.9 million USD in foreign assistance from the United States to reduce the transmission and impact of HIV/AIDS through support for prevention, care and treatment programs [1]. UNAIDS estimates there are 1.3 million adults and children living with HIV in Uganda, with over 50,000 newly infected each year [2]. 4% of young people aged between 15 and 24 years are HIV positive [3] and 1 in 5 new infections occur among young women aged 15-24 years old [4]. HIV prevalence among adolescent girls aged 15-19 (3%) is almost double the prevalence rates among adolescent boys (1.7%) [4]. Only 72% of HIV positive individuals in Uganda are receiving Antiretroviral Therapy (ART) [5].

Most data collected related to sexual health and HIV knowledge and beliefs in Uganda has been measured with adult populations [6]. This is in part due to stigmatization around discussing sex and HIV among youth. Comprehensive sexual education has been banned in Ugandan schools, and sex is banned before the age of 18, yet 43.3% of men and 62% of women report having had sex as minors [6]. The median age at first intercourse for women aged 20-49 in the northern Lango region, where this study was implemented, is 16.6 years [6].

Considering the high prevalence of HIV and limited access to comprehensive sexual health education among Ugandan youth, we designed a study aimed to evaluate youth attitudes and knowledge towards safe sex practices, pregnancy intentions, and prevention of HIV and other Sexually Transmitted Infections (STI). The aim is to inform community-based programming in the region and highlight the need for more adolescent-targeted HIV programming throughout Uganda.

Methods

Study Design and Setting

A cross-sectional study was conducted in June 2018 among primary and secondary school students from 19 schools in Oyam District. The district is located in the northern Uganda, region of Lango and it covers an area of 2,191 square kilometers. Schools from all four town councils in Oyam were included. The district has 112 primary and 13 secondary schools; 14 primary schools and five secondary schools participated in the study; 18 were public and 1 was privately owned.

Sample

Through convenience sampling, youth participating in a community-based educational program, which was attended by 1,000 school children from throughout Oyam, were invited to participate in a survey. The final sample size for the study was 242 students (147 females and 95 males). Female participants were oversampled due to specific research interest in the knowledge and attitudes of girls who are most at risk of becoming pregnant and/or HIV positive during adolescence and young adulthood.

Participant Recruitment

Participants for the study were drawn from 14 primary and five secondary schools in Oyam district that were participating in the annual youth camp hosted by non-governmental organizations Global Health Network Uganda and Ray United FC. 40 primary school students and 80 secondary school students were selected by each school to participate in one day of the camp for a total of 1,000 camp participants over a four-day period. Schools determined which students would participate using their own criteria (e.g. performance, citizenship), but were required to send equal numbers of male and female students. At the camp, students received public health education and soccer training.

After obtaining permission from district authorities, the Institutional Review Board (IRB) at the University of Southern California and the Ugandan National Research Council, the research team approached the leadership of each school to seek for permission to conduct the study with the students that would be attending camp. All students participating in camp were given a parental consent form to be signed prior to attending camp. Convenience sampling of campers took place on each day of camp. Research team members approached individual students during the camp activities and asked if they would be willing to participate in the study. In addition to their parent's prior consent, all students who agreed to be surveyed provided informed assent before starting the interview.

The interviews were conducted by the research team using a structured interviewer-administered questionnaire. The tool was developed by the investigators after a review of the literature about demographics and burden of disease in the region. The questionnaire was written in simple English and was translated into the local language (Luo). Although English is the language of instruction in the schools, translation to the local language ensured that the students fully understood the questions. The questionnaire was pretested among 200 students from other schools participating in RUFC's camp in 2017. Necessary adjustments were made to the questions to ensure clarity. The items on the questionnaire were organized under the sections of demographic characteristics, self-esteem, and knowledge and beliefs. An additional section on feminine hygiene management was included for girls aged 13 and above.

Data Management and Analysis

Data was actively entered in Kobo Collect through a tablet by a research team member at the time of the interview and the data was uploaded through a Wi-Fi network to the secure Kobo Toolbox database [7]. Data were analyzed using SPSS Statistics Version 24. Descriptive statistics were used to summarize the sociodemographic characteristics of participants and a nominal logistic regression model was used to determine variables that influenced outcomes of interest. In all statistical tests, a value of less than 0.05 was considered to be significant.

Results

A total of 242 students were interviewed using interviewer-administered questionnaires. The age range was 11-19 years and the mean age was 14.84 (SD ± 1.94). 143 females (60.2%) of the students were female and 95 males (39%) were male. Years attending school ranged from 0 to over 10 years with the majority of students having attended school for more than 6 years (64%). Over half (64.9%) of students' parents worked as farmers and a large majority accessed water from a borehole or a well (83.4%). 20.2% of students reported not having enough to eat on most days and 21.5% indicated that they had never been seen by a doctor. Other sociodemographic characteristics are shown in Table 1.

		Count	%
Sex	Female	147	60.7%
	Male	95	39.3%
Age	11-12	25	10.4%
	13-14	83	34.3%
	15-16	70	29%
	17	52	21.5%
	18<	12	5%
Years of schooling	0	5	2.1%
	1-3 years	15	6.2%
	4-6 years	67	27.7%
	7-10 years	86	35.5%
	10+ years	69	28.5%
Parents' job	Agriculture	157	64.9%
	Business	25	10.3%
	Health Professional	7	2.9%
	Teacher	28	11.6%
	Other	25	10.3%
Last doctor's visit	Never	52	21.6%
	Past year	172	71.4%
	2-10 years	13	5.4%
	10+ years	4	1.7%
Enough to eat on most days	No	49	20.2%
	Yes	193	79.8%

Table 1: Student Demographics.

The majority of students understood that using a condom is an effective way to prevent pregnancy (89.8%) (Table 2). However, one in ten indicated that covering male genitalia with any barrier, such as a plastic bag, may serve as a contraceptive. The vast majority of students indicated that they wanted 5 or less children, with only 5% desiring more than 5. Nearly 70% indicated that their preference was to have children after 23 years of age. Over 90% of students said that if they did become pregnant, they would seek care at a local health clinic, although less than 1 in 7 believe it is safe to give birth in their community.

		Female	Male
Desired # of children	1-2	22.2%	22.3%
	3-5	72.9%	70.2%
	>5	4.9%	7.4%
Desired age of first child	15-18	3.5%	3.2%
	19-22	23.1%	11.7%
	23-26	42.0%	38.3%
	After 26	31.5%	46.8%
Pregnancy is prevented by:	Pouring soda on female genitalia before/after sex	7.1%	5.5%
	Girls quickly urinating after sex	6.4%	1.1%
	Girls jumping up and down after sex	8.5%	3.3%
	Covering male genitalia with any barrier such as plastic bags	12.1%	9.9%
	Using a condom	93.6%	96.7%
Preference for Pregnancy Care	Local health clinic	97.9%	94.6%
	Traditional birth attendant	2.1%	2.7%
Giving birth in the community is…	Dangerous	83.0%	89.9%
	Safe	17.0%	10.1%

Table 2: Reproductive Health Knowledge.

Nearly one fifth of students (16.37%) believe it is not possible to contract a sexually transmitted infection while married (Table 3). Almost all participants correctly identified sex with an infected individual as a means of HIV transmission, but over one third of youth are unaware that HIV may be transmitted from infected mother-to-unborn child. One in five participants incorrectly identified kissing as a mode of HIV transmission. 82.1% of participants do not believe HIV is treatable. Of those who believe HIV to be treatable, only two individuals were able to use the medical terminology, Antiretroviral Therapy (ART), to describe the treatment. Over half of participants indicated they would not be at all embarrassed to tell their families if they were to get HIV (53.35%), but 30% indicated that they would not be friends with a HIV positive individual.

		Female	Male
Can you get a STD when you are married?	No	14.3%	17.9%
	Yes	85.7%	82.1%
HIV/AIDS spread through	Sharing Food	2.7%	3.2%
	Hugging	4.8%	2.1%
	Sharing bathroom	6.8%	6.3%
	Kissing	24.7%	15.8%
	Mother to Child	66.4%	58.9%
	Sex	95.2%	100.0%
Is HIV/AIDS treatable?	No	78.8%	86.3%
	Yes	21.2%	13.7%
How embarrassed would you be to tell your family you were HIV positive?	Not at all	51.7%	58.9%
	Very little	8.3%	12.6%
	Somewhat	13.1%	11.6%
	Very much	26.9%	16.8%
Are you/would you be friends with an HIV+ individual?	No	29.5%	26.3%
	Yes	70.5%	73.7%

Table 3: HIV Knowledge and Stigma.

HIV transmission knowledge was significantly related to age, years of schooling, and parental occupation (Table 4). Accurate knowledge of HIV transmission was significantly related to likelihood of a student indicating that they would be friends with an HIV positive individual.

	HIV/AIDS Transmission Knowledge				HIV/AIDS Treatment Knowledge				HIV+ Friend			
	Reference: All 6 transmission answers correct				Reference: HIV/AIDS treatment answer correct				Reference: Answered 'Yes' to 'Would you be Friends with an HIV+ Individual' question			
Predictor	***B***	***Sig.***	***OR***	***95% CI***	***B***	***Sig.***	***OR***	***95% CI***	***B***	***Sig.***	***OR***	***95% CI***
Female	0.103	0.716	1.109	0.636-1.933	-0.517	0.163	0.596	0.289-1.232	0.116	0.721	1.122	0.595-2.117
Age 11-13 (2)	0.777	0.021	2.175	1.126-4.203	0.263	0.512	1.301	0.593-2.854	0.392	0.357	'1.480	0.643-3.405
Years in School 1-6 years	0.818	0.010	2.266	1.220-4.21	0.486	0.238	1.626	0.725-3.650	0.753	0.028	2.124	1.086-4.154
Parent Occupation												
Professional	-1.334	0.001	0.263	0.118-0.585	-0.853	0.044	0.426	0.186-0.976	0.302	0.476	1.352	0.590-3.101
Government	-0.213	0.773	0.808	0.238-2.747	-0.601	0.399	0.548	0.136-2.216	1.109	0.080	3.030	0.875-10.498
Other	-0.708	0.275	0.493	0.138-1.756	0.539	0.617	1.714	0.208-14.135	1.071	0.101	2.918	0.813-10.476
HIV/Transmission									2.608	0.001	13.573	2.816-65.432
Model Fitting Chi-Square	28.419				9.532				33.538			
Model Fitting Sig	0.000				0.146				'0.000			
Pseudo R (Cox and Snell)	0.111				0.039				'0.130			

Table 4: Variables Related to Knowledge of HIV Transmission, Treatment, and Stigma.

Discussion

Considering the lack of comprehensive sex education in Uganda's schools, it is not surprising that HIV prevention among adolescents remains a challenge, as does teen pregnancy. The study results indicate that the students are aware of many basic facts about Sexually Transmitted Diseases (STDs) and HIV in particular, specifically that disease is spread through intercourse. However, deeper knowledge about safe sexual behaviors, other forms of HIV transmission, and treatment options is weaker.

The survey results point to a large gap between family planning intentions and results. The average live births per woman in the Lango region is 5.1 –on the higher end of the 2-5 children that 9 out of 10 students indicated they eventually wanted to have [6]. The average age at first birth in Lango is 18, nearly a decade earlier than the 36% of students that indicated they would prefer to have their first child after 26 years of age [6]. Only 8 students indicated they felt it was best to have their first child as a teenager, suggesting that most teen pregnancies are unintended.

Perhaps the most problematic finding from the survey data was the low awareness of HIV treatment. Increasing knowledge about treatment options for HIV is critical for multiple reasons. First, as evidenced by our data, awareness of treatment and its impact on survivability and contagion reduces fear and stigma of the disease. Reduced stigma increases individual willingness to be tested and, consequently, can help increase treatment coverage which remains far too low throughout Uganda. Second, treatment is critical for HIV-positive mothers to break the path of transmission

to their babies. Mother-to-child transmission of HIV is completely preventable, but our results indicate that at the age of first pregnancy, most women in the region are not aware of what they need to do to ensure that they do not pass HIV to their child [7]. Third, treatment is increasingly a core method of disease prevention with HIV positive patients having their viral loads reduced to the point that they are no longer contagious. HIV treatment can transform the social and sexual lives of people living with HIV, as well as their partners, and can play a major role in reducing the overall burden of the disease within at-risk populations.

While our results indicate that there is no statistically significant difference between the knowledge of girls and boys in relation to pregnancy prevention or HIV transmission, the consequences of misinformation are far greater for young women, who are more heavily impacted by teenage pregnancy, which often resulting in school dropout and maternal health dangers. Young women have an increased risk of contracting HIV, often as a result of having sex with older men, and are then at risk of transmitting the disease to their babies. Consequently, young women in particular need programs that increase their knowledge and empower them to protect themselves from unwanted sex, unintended pregnancies, and STD transmission.

There are a number of limitations with the study. In the area where the study took place, a significant portion of youth are not in school and are not represented in this study. With this in mind, we can hypothesize that general knowledge about sexual and reproductive health and HIV may be lower among this population than the youth surveyed who have been able to remain in school.

Conclusion

The results of the survey point to the need for increased sexual and reproductive health education for adolescents in Uganda and targeted campaigns to increase knowledge about HIV transmission and treatment. The lack of knowledge among the study population about HIV treatment is especially problematic given that treatment is linked to longer, healthier lives, prevention of mother-to-child transmission, and reduced risk of transmission to sexual partners. However, significant cultural barriers remain in discussing these topics with youth in Uganda. Consequently, more research is needed to identify culturally acceptable programs that can be implemented to empower youth to protect themselves and fulfill their sexual and reproductive intentions safely and as planned.

Declarations

Ethics approval and consent to participate

Ethical approval for the study was received from the Institutional Review Board (IRB) at the University of Southern California and the Ugandan National Research Council.

Funding

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Authors' Contributions

SSC assisted in the design of the survey instrument, data collection, and data analysis and was a major contributor in writing the manuscript. JK assisted with development and the translation of the survey instrument, facilitated Ugandan ethics approval, and led data collection. WA served as the overall study manager and led participant recruitment. RW assisted with the survey design, data collection, and data dissemination. HW oversaw the development of the survey instrument, data collection, data analysis and led the drafting of the final manuscript. All authors read and approved the final manuscript.

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