

Increased sexual abstinence among in-school adolescents as a result of school health education in Soroti district, Uganda

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Abstract

A school health education programme in primary schools aimed at AIDS prevention in Soroti district of Uganda emphasized improved access to information, improved peer interaction and improved quality of performance of the existing school health education system. A cross-sectional sample of students, average age 14 years, in their final year of primary school was surveyed before and after 2 years of interventions. The percentage of students who stated they had been sexually active fell from 42.9% (123 of 287) to 11.1% (31 of 280) in the intervention group, while no significant change was recorded in a control group. The changes remained significant when segregated by gender or rural and urban location. Students in the intervention group tended to speak to peers and teachers more often about sexual matters. Increases in reasons given by students for abstaining from sex over the study period occurred in those reasons associated with a rational decision-making model rather than a punishment model. A primary school health education programme which emphasizes social interaction methods can be effective in increasing sexual abstinence among school-going adolescents in Uganda. The programme does not have to be expensive and can be implemented with staff present in most districts in the region.

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Introduction

The first cases of AIDS were identified in Uganda in the early 1980s (Kagimu, 1996). Since then the epidemic has progressed, with an estimated 1.5–2.0 million Ugandans out of a total population of 18 million HIV-positive (STD/ACP Programme, 1995).

The spread of HIV in Uganda is thought to have been exacerbated by poverty, a breakdown of health services, disruption of society by civil war, a tendency towards multiple sexual partners, the low status of women in society and a relatively early onset of sexual activity (Ankrah, 1990; Barnett, 1992).

In 1995 a national survey estimated the median age of first intercourse for females from age 20 to 24 years to be 16 years and that by the age of 15 years, 30% of girls had engaged in sexual intercourse. The same survey showed a median age at first intercourse for males of 17.6 years for the age range from 25 to 54 (Statistics Department, 1995a,b). Other surveys have shown that as many as 62% of primary 7 (P7) boys and 38.5% of P7 girls are sexually active in certain districts of Uganda (Bagarukayo, 1992). Ugandan adolescents are at risk for the adverse effects of the early onset of sex, such as pregnancy, STDs and HIV/AIDS.

About 7% of AIDS cases reported in Uganda that were not acquired perinatally, i.e. not paediatric AIDS, have occurred in the 15–19 years age group, implying that infection occurred at a much younger age. In this age group, symptomatic women outnumber symptomatic men by a ratio of 6:1 (STD/ACP MOH, 1995).

Uganda has chosen a multi-sectoral response to

the AIDS epidemic (Uganda AIDS Commission, 1992). One of the responses has been the introduction of health education, including AIDS prevention, into the primary school curriculum. The Uganda AIDS Commission's National Operational Plan emphasizes mutual faithfulness, abstinence and delayed sexual debut as the highest priority strategies in the age group from 11 to 20 years. Early diagnosis and treatment of STDs, reduction of number of sexual partners, and safer sexual practices, including the use of condoms, are also endorsed as secondary strategies for this age group (Uganda AIDS Commission, 1993).

School health education is promoted as a means to improving health throughout the world, including mitigating the spread of HIV (WHO Expert Committee, 1995). Sex education is often accepted, but not without controversy, and there are doubts expressed concerning its efficacy (Whitehead, 1994). Programmes have often started with inadequate plans for evaluation of impact and this has made it difficult to defend programmes from detractors (Oakley, 1995). It is easier to document changes in knowledge than actual behaviour change (Russell-Brown, 1992; Caceres, 1994). However, data from the UK showing a decrease in sexual activity related to an effective school health education programme does exist (Mellanby, 1995). Data from Kabale district showed no decrease in sexual activity from 1989 to 1992 among primary school students exposed only to the national curriculum (Bagarukayo, 1993). Intensified school health education in Kabale from 1992 to 1994 showed large changes in self-reported sexual behaviour in a cross-sectional sample of 400 P7 students, average age 14 years, with the overall level of sexual activity ever falling from 50 to 21% (Bagarukayo, 1995).

Effective school health and sex education programmes seem to emphasize social learning theory (Kirby, 1992). Programmes relying exclusively on dissemination of information are felt to have less success than programmes that include reinforcement of individual and group norms against unprotected sex (Baldo, 1992; Schincke, 1992).

The African Medical and Research Foundation,

in conjunction with the Soroti District Administration, implemented an intensified school health education programme in the primary schools of two rural counties and the municipality of Soroti district of northeastern Uganda from 1994–1996. The project provided an opportunity to document whether behavioural change occurred due to the interventions.

Methods

Setting

Soroti district is located in northeastern Uganda and has a population of about 450 000. There are two major ethnic groups, the *Ateso* and the *Kumam*. The predominant economic activity is subsistence agriculture, with limited cattle rearing and fishing. The economy was markedly disrupted by civil unrest from the mid-1980s to about 1992. Schools suffered greatly during the civil unrest, and many were looted, damaged and left in states of disrepair, with many holding classes in the open air. School attendance is similar to the rest of Uganda, with 90% of children entering primary school and 40–50% finishing (Statistics Department, 1995a,b). The project area included 95 primary schools with a total population of about 120 000.

Interventions

The key interventions were:

- (1) Improved access to information and other resources for healthy sexual behaviour decision making.
- (2) Improved adolescent to adolescent interaction regarding information and decision making relating to AIDS, sexuality and health.
- (3) Improved quality of the existing district educational system in the implementation of the school health curriculum and in counselling/advice giving to students.

The emphasis was on using existing structures and frameworks, rather than creating new structures which would be difficult to sustain. The project employed one full time health educator (S. O.) in

the district but otherwise depended on staff already present on the district education and health teams.

Activities included:

- (1) Formation of a local project steering committee.
- (2) Sensitization of local leaders and headmasters through a 1 day training.
- (3) Surveying of knowledge, attitudes and practices through focus groups and a questionnaire to serve as a baseline for programme design, a tool for evaluation of success, and a means of informing the local leaders and students about the magnitude of the problem.
- (4) Once per school term (three per year) supportive supervision visit of schools based on a school health checklist to monitor the school and implementation of health education activities.
- (5) Meetings of parents, teachers and community leaders organized at the existing zonal school level to discuss health/sex education issues.
- (6) Formation and meetings of school health clubs, application of child-to-child health education techniques, and competitions in plays, essays, poems and songs on health-related issues.
- (7) One week training for senior women tutors and science teachers, who also serve as senior men tutors, to improve their skills as health educators. Senior men and women tutors are teachers designated by the schools to give advice to students.
- (8) Training in the local teachers' training colleges on implementation of the school health curriculum, AIDS prevention and the use of child-to-child techniques.
- (9) Answering of questions in student question boxes.

The project was designed to begin in two counties and the municipality of Soroti district, while routine educational activities, including the national school health curriculum, continued in the rest of the district. A county adjacent to one of the implementation counties was surveyed as part of the baseline survey and this county served as a control for purposes of this study.

Study methods

A questionnaire in English, the language of instruction in upper primary schools in Uganda, was developed and field tested with groups of students, teachers and parents to assess whether it was understandable and socially acceptable.

The baseline data was collected during February–March 1994. Thirty-eight primary schools were selected randomly from all the primary schools in Kaberamaido sub-district, which includes Kalaki and Kaberamaido counties, and the municipality of Soroti. Twelve schools were sampled from Kaberamaido county, 15 schools from Kalaki county and 11 from the municipality.

At each school, 10 students, five boys and five girls, were selected randomly from the P7 class using a serial counting method. The students were then seated in a private room where they could write confidentially. No teacher accompanied the group and no personal identification marks were put on the questionnaires. The questionnaire was explained question by question in English and the vernacular, although it was filled out in English, the language of instruction. In Soroti municipality, two large schools with twice the number of students had 20 students, rather than 10, coming from each.

The same procedure was repeated in the November 1996 survey, using the P7 class that was present 2 years later. The schools were chosen randomly, 12 from Kaberamaido, 15 from Kalaki and 11 from the municipality on the repeat survey.

Kalaki county and Soroti municipality were the intervention areas with intensified school health education, and Kaberamaido was the control area where students were exposed to the standard school health and AIDS education programme of Uganda.

The sample drawn from each area is presented in Table I.

The data was entered into a computer and analyzed using the EPI INFO 6.0 software package.

Results

The participants average age was 13–14 years of age, and there were approximately equal numbers

Table I. Size of control and intervention groups

	Intervention			Control
	Kal	Muni	Total	Kab
1994	144	143	287	113
1996	150	130	280	120

Kal = Kalaki County, a rural site; Muni = municipality of Soroti, a town site; Kab = Kaberamaido County, a rural site.

of males and females in the intervention and control groups. No differences were noted in religious affiliation. More students from the municipality live with someone other than parents. The characteristics of respondents are presented in Table II.

Each student was asked whether he or she had ever been sexually active or participated in sexual intercourse. The question was asked in both English and the vernacular, and it was possible to ask for explanations. In 1994, 42.9% (123 of 287) of students in the intervention group described themselves as sexually active, while 25.7% (29 of 113) in the control group did so. In 1996, those who stated they were sexually active in the intervention group fell to 11.1% (31 of 280), while sexual activity in the control group remained unchanged at 26.7% (31 of 120). Students in the intervention group were 3.9 times more likely to be sexually active in 1994, as in 1996 ($P < 0.001$). The control group contained no students from the municipality. The trends in changes of sexual behaviour hold true when the municipality is excluded and rural groups only are analyzed or when genders are separated. In 1994, the rural intervention group was 3.7 times as likely to be sexually active as in 1996 ($P < 0.001$). There was no change in sexual activity in the rural control group between 1994 and 1996 (Table III).

The risk ratio of being sexually active in 1994 as compared to 1996 for males in the intervention group was 2.45 ($P < 0.001$). The risk ratio for females in the intervention group being sexually active in 1994 as compared to 1996 was 1.76 ($P < 0.001$). The changes in the control groups between years for both sexes did not reach levels of statistical significance (Table IV).

More students from the municipality than in rural areas lived with someone other than parents. This was true for 25% of students from the municipality in both 1994 and 1996. There was no statistically significant difference in self-reported sexual activity between those who lived with one or both biological parents and those who lived with others.

Students were asked to state their age at the time of first intercourse. In 1994 the question must have been misunderstood, as 17 of 120 (14.1%) in the intervention group and five of 27 (18.5%) in the control group replied 5 years of age or less, including seven who answered 0 years. In 1996, only one of 31 in the intervention group and none of 32 in the control group gave such an answer. Mean age of first intercourse was estimated after those answers under the age of 6 years were excluded.

Using these methods, in the intervention group in 1994, the average age of first intercourse was 11.3 years (range 6–19, SD 2.9), while in the control group it was 12.4 years (range 9–18, SD 2.5). In 1996, the mean age of first intercourse in the intervention group was 10.9 years (range 6–17, SD 2.9), while in the control group it was 12.5 years (range 7–17, SD 2.7). These changes were not statistically significant.

The number of students who felt their three closest male friends were sexually abstinent in the intervention group increased from 116 of 279 (42%) in 1994 to 217 of 278 (78%) in 1996 (RR 0.53, $P < 0.001$). The control group values for male friends being abstinent were 53 of 111 (48%) in 1994 and 50 of 120 (42%) in 1996, a change that does not reach levels of significance.

The values for the same questions for the three closest female friends being abstinent in the intervention group were 111 of 276 (40%) in 1994 and 227 of 274 (83%) in 1996 (RR 0.49, $P < 0.001$). In the control group the values for female friends being abstinent were 49 of 103 (48%) in 1994 and 50 of 120 (42%) in 1996, a change that does not reach statistically significant levels.

The number of friends felt to be sexually active decreased greatly in the intervention group and

Table II. Characteristics of respondents

Characteristic	1994		1996	
	Intervene (<i>n</i> = 287)	Control (<i>n</i> = 113)	Intervene (<i>n</i> = 280)	Control (<i>n</i> = 120)
Mean age (years)	14.0	13.8	13.8	13.7
SD	1.31	1.86	1.10	1.37
Age range	10–18	9–22	10–17	9–18
Males/females	147/140	54/59	139/141	58/62
Religion (%)				
Catholic	139 (49)	60 (53)	140 (50)	60 (50)
Church of Uganda	104 (36)	45 (40)	104 (37)	53 (44)
Islamic	9 (3)	3 (3)	11 (4)	0 (0)
other Protestant	34 (12)	5 (4)	25 (9)	7 (6)
Living situation (%)				
both parents	140 (49)	68 (60)	154 (55)	68 (57)
mother only	78 (27)	36 (32)	64 (23)	33 (28)
father only	12 (4)	4 (4)	22 (8)	9 (8)
other	57 (20)	5 (4)	40 (14)	9 (8)

Table III. Proportions of rural P7 students who reported they had 'played sex' or participated in sexual intercourse, 1994 and 1996

	1994	1996
Intervention (Kalaki)	57/144 (39.6%)	16/150 (10.7%)
Control (Kaberamaido)	29/113 (25.7%)	31/120 (26.7%)

In 1994 the intervention group was 3.7 times as likely to be sexually active ($P < 0.001$). There was no change in sexual activity in the control group between 1994 and 1996.

showed little or no change in the control group. This can be interpreted as an internal check on the accuracy of student replies about their own sexual behaviour.

Frequency of intercourse greatly influences whether students risk complications. Two questions were asked to assess the frequency of sex. The questions were whether a student had participated in sexual intercourse in the past month and the number of lifetime sexual partners. In 1994, in the intervention group, 28 of 123 (23%) of students who had stated that they were sexually active answered that they had participated in sex in the past 1 month. In 1996, 20 of 31 (65%) of this group had participated in sex in the previous month. In the control group, 12 of 29 (42%) of

Tables IV. Proportions of P7 students who reported they had 'played sex' or participated in sexual intercourse separated by gender

	1994	1996
Intervention		
males	90/147 (61.2%)	22/117 (15.8%)
females	33/140 (23.6%)	9/132 (6.4%)
Control		
males	17/54 (31.5%)	24/58 (41.4%)
females	12/59 (20.3%)	8/62 (12.9%)

The risk ratio of being sexually active in 1994 as compared to 1996 for males in the intervention group was 2.45 with $P < 0.001$. The risk ratio for females being sexually active in 1994 as compared to 1996 was 1.76 with $P < 0.001$. The changes in the control groups between years for both sexes did not reach levels of statistical significance.

those stating they were sexually active had been sexually active in the past month, while 25 of 32 (78%) stated that this was so in 1996.

The average number of sexual partners of those who claimed to be sexually active in the intervention group was 2.2 (range 1–15, SD 2.3) in 1994 and it was 1.4 (range 1–3, SD 0.6) in 1996. In the control group, the average number of partners was 2.1 (range 1–8, SD 1.8) in 1994 and 2.0 (range 1–15, SD 2.3) in 1996.

Table V. Sources of information of P7 students about AIDS

Characteristic	1994		1996	
	Intervene (<i>n</i> = 287)	Control (<i>n</i> = 113)	Intervene (<i>n</i> = 280)	Control (<i>n</i> = 120)
Teacher	224 (78)	84 (74)	247 (88)	102 (85)
Radio	202 (70)	59 (52)	190 (68)	86 (71)
Health worker	151 (53)	64 (57)	166 (59)	80 (67)
Mother	144 (50)	56 (50)	162 (58)	74 (61)
Magazine	137 (48)	55 (49)	111 (40)	50 (41)
Father	135 (47)	41 (36)	158 (56)	71 (59)
Brother/sister	122 (43)	43 (38)	139 (50)	69 (58)
Friend of same sex	112 (39)	47 (42)	166 (59)	63 (52)
Pastor/religious	108 (38)	39 (35)	99 (35)	64 (53)
Opposite sex friend	84 (29)	34 (30)	110 (39)	74 (61)
Local council member	52 (18)	24 (21)	73 (26)	47 (39)
Chief	43 (15)	22 (19)	48 (17)	24 (20)
Traditional healer	38 (13)	16 (14)	28 (10)	18 (15)

Percentages are given in parentheses.

Accurate information is one factor in decision making. Knowledge that AIDS exists may be a prerequisite to taking decisions to avoid AIDS. In 1994, 270 of 286 (94.4%) of students in the intervention group and 96 of 113 (85.0%) in the control group had heard of AIDS. In 1996, 268 of 279 (96.1%) of students in the intervention group and 114 of 120 (95.0%) in the control group had ever heard of AIDS or slim. The differences between the groups in 1996 in knowing that AIDS exists were not statistically significant and cannot explain the behaviour differences.

One strategy for HIV of AIDS control in Uganda has been to increase sources of information about AIDS. Sources of information were relatively similar in the control and intervention groups, with modest increases between 1994 and 1996 (Table V).

Sources of information were similar in the intervention and control groups, indicating that access to information was similar between the two groups and would not explain the differences in behaviour. No measure of the quality of the information was obtained.

A key project strategy was to increase interaction between multiple groups on issues relating to sexual health. Counselling and discussions between

peers and between students and teachers were encouraged. In the intervention group, the number of students who said they discussed sexual matters with schoolmates increased from 85 of 287 (30%) to 141 of 280 (50%) ($P < 0.001$), while the change in the control groups was from 30 of 113 (29%) to 43 of 120 (36%) ($P = 0.34$). Students discussing sexual matters with teachers, as opposed to just receiving information from teachers, increased in the intervention group from 9 to 44% ($P < 0.001$), while in the control group it increased from 12 to 21% ($P = 0.13$).

The study aim was to encourage students to change basic attitudes about sex and therefore encourage safer sexual behaviour, particularly abstinence. A series of questions was asked concerning the reasons students gave for having or not having sex, and whether abstinence was a good thing and whether there were any risks to abstinence. The reasons given for being sexually active in the intervention group in 1994 in descending order were (more than one answer per student possible): natural feeling (50%), friends did it (37%), copied adults (14%), forced (13%), reward/gift (5%) and others (1%). These percents did not change significantly in the 1996 survey. Even though the percentage of forced

sexual activity remained the same, the absolute numbers of episodes of forced sex decreased as fewer students were sexually active.

The reasons for not having sex in the intervention group in 1994 were in descending order (more than one answer per student possible): fear of disease (54%), good to abstain until marriage (49%), do not feel like it (42%), it is a sin (41%), parental punishment (38%) and fear of pregnancy (34%). In 1996 the reasons given for not being sexually active were: fear of disease (65%), good to abstain until marriage (62%), do not feel like it (55%), it is a sin (41%), parental punishment (35%) and fear of pregnancy (34%).

The increases in reasons for abstinence came in reasons based on rational decision making rather than on a punishment model.

When asked whether abstinence before marriage was a good thing or not, in 1994 186 of 286 (65.0%) of the intervention group and 76 of 113 (67.3%) of the control group felt it was a good thing. Two years later, 222 of 278 (79.9%) of the intervention group felt it was a good thing, while 76 of 120 (63.3%) of the control group felt it was good. The change in the intervention group is statistically significant ($P < 0.001$).

Personal experience with AIDS may also influence behaviour. In 1994, 72 of 286 (26%) of the intervention group and 24 of 113 (22%) of the control group had a family member with AIDS. By 1996, the figures were 100 of 280 (36%) in the intervention group and 38 of 120 (32%) in the control group. The increase in direct family experience with AIDS was similar in both groups and cannot explain the behaviour changes.

Personal experience with AIDS could be postulated to encourage an adolescent to be less likely to engage in sexual intercourse. This did not prove to be the case. In 1994, in both intervention and control groups those who had a family member with AIDS were more likely to be sexually active than average. In 1996, for the control group, this trend continued, but was reversed for the intervention group. In 1994, in the intervention group, 39 of 72 (54%) of those with a family member with AIDS were sexually active. In 1996

this fell to eight of 100 (8%). In the control group in 1994, eight of 24 (33%) of those students with a family member with AIDS were sexually active and in 1996, 17 of 38 (45%) were sexually active.

Discussion

This study demonstrates that sexual behaviour change is possible in a school-going adolescent population. One can argue whether self-reported behaviour change on an anonymous questionnaire represents actual behaviour change or a desire of respondents to write expected answers. A learning effect for completing questionnaires is unlikely in this study, as it was not the same group of students answering the questions in 1994 and 1996, and for each respondent it was the only time that they saw the questionnaire. The intervention group would possibly have more knowledge of the desired answers as far as behaviour is concerned, but they would not know which process indicators would be used to monitor change.

Over 90% of children in Uganda enter primary school and 40–50% complete seven years of primary education. Therefore, a majority of youth can be reached through effective school health education. A key concept, however, is that the school health education must have certain components to be effective. This project aimed at more than just the dissemination of information. The project increased human-to-human interactions which have more potential for effecting behaviour change (Farquhar, 1978).

There was little difference between the intervention and control groups in whether they had heard of AIDS and their sources of information about AIDS. One major difference in the intervention groups was that they had a higher rate of interaction between students and an increase in discussions, not just the passing of information, between teachers and students. This increase in interaction occurred by design as the major strategy of the project. It required training for those involved, including headmasters, teachers and senior women tutors. More importantly, it required supervision from the district education office to the primary

schools in the project area. The supervision was not intense, with a target of one visit per school per term, but it was enough to document that activities were occurring in schools. Such supervision demonstrated that health education was a priority of the district education office.

Personal experience is believed to alter behaviour. It was somewhat surprising that those students who had a family member with AIDS were more likely to be sexually active in 1994. In 1996 this remained true among the controls, but not in the intervention group. Experience with AIDS in the family was not enough to cause decreased sexual activity. The project interventions may have allowed the experience of having a family member with AIDS to be processed in such a manner as to lead to a more rational interpretation of that experience and therefore to a change in sexual behaviour.

Other confounding factors cannot be completely ruled out. However, the fact that the process indicators are consistent with the desired behaviour change supports the assumption that the documented changes are real and that the interventions were to a large degree responsible for the changes. One could postulate that the students in the intervention area had a better idea of what answers the investigators were seeking. However, one would then have to postulate that they were also not telling the truth about their opinions about their fellow classmates and about the intermediate or process indicators concerning whom they were discussing sex with.

The fact that the absolute number of students who said they had engaged in sexual intercourse in the month prior to the survey changed less significantly (28 of 287 in 1994 and 20 of 280 in 1996) may indicate that behaviour change is most likely in those who are less sexually active. This would seem to be evidence of a need for safe sex alternatives for those who remain sexually active, although the programme emphasis should remain on abstinence. The current study does not show how long lasting the increase in abstinence will be, but even a temporary increase in abstinence

will have a beneficial effect on the health of adolescents.

The effects of interventions in this study were greater than those in a similar study from the developed world (Mellanby, 1995). A possible reason is that Soroti is very rural and there are fewer competing messages. Advertising, cinemas and popular music which tend to promote sexual activity may be less common in rural Africa, allowing alternative messages to be more effective.

A primary school health education programme which emphasizes social interaction methods of behaviour change has been shown to be effective in promoting sexual abstinence among in-school adolescents in rural Uganda. For the programme to be effective it must comprise more than information. The inputs required are modest and can be applied via structures that already exist within most communities. Unfortunately, in much of the world, existing systems are not functioning efficiently due to problems with finances, motivation, supervision and underdevelopment. The project employed one full-time health educator who played a key role in mobilizing existing personnel within the district and improving the quality of their services. No allowances were paid outside of normal government policy. The actual activities would be considered those normal for staff in those positions. It is our contention that the existing health education curriculum and strategies are adequate. However, to have an impact on behaviour the quality of delivery of the curriculum and strategies must be of sufficient quality and intensity. The quality of implementation is probably more important than the detailed design of materials or curricula.

Increased efforts to implement school health and sex education effectively should be part of strategies to decrease AIDS, STDs and unplanned pregnancy. Those efforts should concentrate on improving the quality of actual delivery of school health education, using simple, but effective behaviour change techniques such as experiential learning, peer interaction and supportive supervision.

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