



Effects of ‘Edutainment’ Employing
Abstinence and Faithfulness Messages on
First-year Students at the University of
Nairobi



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I Choose Life

Allan Akoko, Brent Hanson, Faith Maina, Mike Mutungi, Ndanu Mulinge, Ekeno Narubu, Isaac Oginga

Family Health International

Constance Ambasa, Baker Maggwa Ndugga, Mario Chen, Suzanne Fischer, Ruth Gathu, Rebecca Gmach, Tom Grey, Ellen Hager, Theresa Hatzell, Claire Jagemann, Barbara Janowitz, Dorcas Kungu, Maureen Kuyoh, Jennifer Liku, Julius Munyao, Pierre Ngom, Zablon Omungo, Michael Stalker, Doug Taylor, Cindy Waszak Geary, Emily Wong

Data collectors employed by FHI

Yolanda Odida, Sammy Mwangi Ndonga, Joseph Mwangi, Charity Wambui, Vincent Oduor Owino, Peter Chacha, Simon Gari, Anne Omollo, Paul Narubu Ekeno, David Odhiambo Odongo, David Akhamali Lusweti Namai, Pauline Oloo, Pauline Macharia, Kennedy Nanga

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Abbreviations

ABC	Abstinence, being faithful, condom use
AGI	Alan Guttmacher Institute
AIDS	Acquired immune deficiency syndrome
CBS	Central Bureau of Statistics
FHI	Family Health International
FHOK	Family Health Options of Kenya
FPAK	Family Planning Association of Kenya (Now FHOK)
HIV	Human immunodeficiency virus
ICL	I Choose Life-Africa
IEC	Information, Education, Communication
KNH	Kenyatta National Hospital
KIKOSHEP	Kibera Community Self-Help Program
LVCT	Liverpool Voluntary Counseling and Testing
NACC	National AIDS Control Council
PEPFAR	President's Emergency Fund for AIDS Relief
PHSC	Protection of Human Subjects Committee
PLWHA	Person(s) living with HIV/AIDS
STI	Sexually transmitted infection
SRH	Sexual and reproductive health
UON	University of Nairobi
UNAIDS	Joint United Nations Program on HIV/AIDS
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
VCT	Voluntary counseling and testing
WHO	World Health Organization

Executive Summary

Background

University students are at risk of contracting sexually transmitted infections, including HIV, due to their risky behaviors. I Choose Life has instituted a peer education program at the University of Nairobi (UON) to address this risk. In order to increase the impact of the program, an education and entertainment (edutainment) component was added in 2004 with the assistance of the President's Emergency Plan for AIDS Relief. Family Health International (FHI) assisted with the intervention design and evaluated this program.

Methods

Four edutainment events geared toward first-year students were conducted between December 2004 and March 2005. The intervention was assessed by employing a quasi-experimental design with a control group. All first-year and second-year students on the Main and Chiromo campuses who consented were asked to fill out a survey in class at the beginning of the 2004-2005 academic year. At the start of the 2005-2006 academic year, only former first-years (now second-years) were asked to fill out surveys. Since activities were targeted to first-year students, they are considered the intervention group (n=1,049). Second-year students, who were only given the survey before any of the edutainment events were held, are considered the control group (n=1,191). The intervention group's responses to questions on their knowledge, attitudes, and behavior were compared to control group's responses. Comparisons were made using multivariate analyses controlling for potentially confounding factors.

Results

The intervention did not affect delay of sexual initiation, secondary abstinence (no sex in the last three months), sex with multiple partners, or condom use. The intervention did have a small effect on attitudes about condom use and safer sexual behavior (defined as either abstaining or using condoms 100% of the time), although this was unexpected as the intervention did not stress the use of condoms. The edutainment activities also affected the intervention group's ability to correctly define abstinence, but the difference from the control group was not noteworthy programmatically.

The majority of students reported practicing some form of reduced-risk sexual behavior. However, amongst those who were sexually active, a sizeable proportion were involved in multiple sexual relationships and unprotected sex.

Finally, 30% of females and 48% of males said they attended at least one edutainment event. Attendance dropped over the course of the semester. Students were more likely to attend if they were male, of rural origin, and sexually experienced.

Discussion

The magnitude of changes seen does not provide sufficient evidence for the effectiveness of edutainment in promoting messages about abstinence and being faithful among university students. The intervention did not have a great effect on the knowledge, attitudes and behaviors of first-year students at the UON. This is likely due to the intervention's short – although intense – length, low coverage, and the complicated nature of behavior change. UON program planners may need to consider alternative/complementary interventions to achieve lasting behavior change, particularly amongst the students with the riskiest behaviors.

Recommendations

Varied interventions are needed to address students' risky sexual behaviors. More interpersonal communication may be one way to more effectively communicate complicated messages about abstinence and faithfulness, and to provide students with the skills they need to implement these behaviors.

More needs to be done to address the risky sexual behavior of students at the UON. For example, access to condoms should continue to be one weapon in the university's HIV prevention arsenal. More also should be done to help young women access messages and interventions. Finally, more research is needed in understanding the best way to help students understand that abstinence and risky sex are not the only options available to them.

INTRODUCTION

In recent years, considerable attention has been paid to the special sexual and reproductive health (SRH) needs of youth (UNAIDS, 2006; UNFPA, 2005).¹ Approximately half of all people infected with HIV are under the age of 25, the majority of them being young women (Senderowitz, 1997). In fact, in sub-Saharan Africa, HIV/AIDS infection is twice as frequent among women of ages 15 to 24 years compared to males of the same age (Stanecki, 2001). In Kenya, 7.8% of men and women aged 15-24 years are HIV-positive, rising to 10% among those living in urban areas (CBS et al, 2003).

HIV/AIDS has been identified as one of the top three critical issues affecting the students at institutions of higher learning in sub-Saharan Africa (Kelly, 2001). The exact prevalence of HIV at the University of Nairobi is unknown. However, extrapolations from the 2003 KDHS indicate that at least one in ten female students and 2% of male students are likely infected (CBS et al, 2003). Despite this likelihood, many university students do not generally regard themselves as being seriously at risk of HIV infection. Their dominant attitudes towards AIDS are denial, fatalism and an air of invulnerability (Kelly, 2001). Such feelings of invulnerability may lead to students engaging in risky behaviors, and thus contributing to the spread of HIV unknowingly throughout the university community (Sigot, 2001).

Low levels of contraceptive use, resulting in high levels of unintended pregnancy and abortion have also been identified as a problem among university students in Kenya. A study by Pathfinder International in 2002 revealed that only 41% of sexually active university students in sites without their peer education program (Moi University and Jomo Kenyatta University of Science and Technology) reported using a contraceptive method during their last sexual intercourse (Pathfindings, 2003). Furthermore, approximately 40% reported unplanned, pre-marital pregnancies and having had an abortion.

The 'ABC' approach

One approach to reducing HIV/AIDS incidence and unintended pregnancy is the 'Abstinence-Be faithful-use Condoms' (ABC) approach. ABC relates to individual behaviors, and also to a program approach and content designed to lead to those behaviors. The 'A' stands for abstinence, either primary or secondary. Primary abstinence can be equated with delayed sexual initiation, which effectively postpones sexual risk-taking among youth. Secondary abstinence is abstaining from sex after sexual activity has already been initiated. The 'B' represents "being faithful," or sexual intercourse between mutually faithful uninfected partners. The 'C' stands for condom use; condoms, when used consistently and correctly, dramatically reduce the risk of disease transmission for those who are sexually active (WHO, 1997).

¹ Defined by WHO as 15-24 year olds.

The ABC approach (particularly the ‘A’ and ‘B’) has been credited with the dramatic reduction in HIV/AIDS in Uganda (Hogle et al, 2002). An analysis of national-level survey data by the Alan Guttmacher Institute (AGI) however, concludes that delays in sexual debut, a reduction in the number of sexual partners and increases in condom use all played a part, and that abstinence itself may have played a smaller role in lowering the risk of HIV in Uganda (Cohen, 2003). Regardless of the relative importance of each approach, there is little disagreement that all three are important. Yet the question remains, what is the best way to communicate these messages to a population?

Peer education and edutainment are two possible modes of communication of ABC messages. Peer education is a labor and cost-intensive activity, which is one reason why it is not widespread at the UON, which has over 30,000 students (www.uonbi.ac.ke). Furthermore, informal discussions with students at the UON revealed that they may not trust their peers but prefer to get information from the Dean of Students or counselors (Hager, 2004). Thus, other mechanisms are needed to generate interest in the messages that peer educators are providing to their peers, and to increase the reach of their efforts. One alternative, mass communication involving messaging from influential people (i.e. education entertainment, or ‘edutainment’), has been recommended by university students in Kenya and has an additional benefit of reaching large numbers of people in a short period of time (Bertrand and Anhang, 2006; ICL, 2004).

Despite its potential, there are few evaluations of edutainment efforts that do not include mass media, such as radio or television (Bertrand and Anhang, 2006). Therefore, in 2005, ICL and FHI, using the U.S. President’s Emergency Plan for AIDS Relief, designed and carried out an intervention at the UON using one form of mass communication - ‘edutainment’ - to communicate messages about abstinence, being faithful, and, to a lesser extent, condom use. In order to evaluate the effectiveness of the program, FHI conducted a controlled, prospective study of all first-year students at the UON. This report presents the results of this evaluation and attempts to draw some conclusions about the usefulness of edutainment as a means of communicating AB messages to students in their first year of university.

Objectives

The goal of the study was to examine the effectiveness of edutainment activities on first year students at the UON. The specific objectives were to examine the:

- (a) knowledge and attitudes about sexual and reproductive health
- (b) level of self-reported abstinence (including secondary abstinence)
- (c) level of mutual monogamy
- (d) level of consistent condom use among first-year university students.²

² Although the intervention did not specifically focus on condoms, some exhibitors at the edutainment events provided messages about condoms, meaning that students who attended events could have received information about their effectiveness.

These outcomes are all presented in the Results section. The following section describes the intervention itself and the evaluation methods.

INTERVENTION

I Choose Life-Africa

The 'I Choose Life-Africa' (ICL) program is a non-governmental organization in Kenya with a vision to have an AIDS-free Africa. In order to achieve this, ICL aims to create a movement of caring communities among students that make responsible and informed choices with regard to life and HIV/AIDS through prevention, care and support, and mitigation of socio-economic impact (ICL, 2004).

At the time of this intervention, the goal of the ICL program was to contribute to the National AIDS Strategic Plan of reducing HIV/AIDS prevalence among youth by 20-30% by 2005. ICL advocates for positive behavior change among students and to do this students are encouraged to form behavior change communication groups. These are groups where students are given the skills to be leaders and influential people who can reach out to the student community with HIV/AIDS messages and also encourage each other to practice responsible sexual behavior. Each BCCG is comprised of two peer educators who team up with five students each to form a BCC group of twelve people. The group meets once every two weeks and the peer educators pass on key messages and help their peers acquire skills necessary to sustain behavior change.

ICL has other modes of reaching students to complement the behavior change groups, such as movie nights and interest groups. The intervention that was tested in this evaluation, which was sponsored by the U.S. President's Emergency Plan for AIDS Relief, consisted of 'edutainment' activities. 'Edutainment' refers to an activity that uses entertainment to communicate educational messages designed to influence its audience cognitively, affectively or behaviorally (Mailbach and Holtgrave, 1995). During the intervention period, four activities (one per month) were held at a central outdoor location on campus. The activities, which are described in detail below, were used to communicate 'abstinence' and 'being faithful' messages to the student population. Activities during the events included public speaking, rapid drama/skits, fashion extravaganzas, testimonies from people living with HIV/AIDS (PLWHA) and health fairs. In addition, other youth-serving organizations were invited to set up booths at the perimeter of the venue and offer services such as voluntary counseling and testing (VCT), syndromic management of sexually transmitted infections (STIs), and general sexual and reproductive health information (see Appendix 1 for list of participating organizations). They also passed out information, education and communication (IEC) materials on STIs, HIV, condoms, and family planning. Some also distributed condoms, although condom use was not emphasized at the events or in the messaging around them.

Messaging

The key messages disseminated during the edutainment activities were developed through a contest held among students at the university. The purpose of the contest was to identify simple and catchy phrases that would enable the students to identify with

abstinence and non-serial mutual monogamy using the language of the students. The selected messages were:

1. *Tia Zii Ni Kuzii* – ‘Stop! Things are bad !’ – to promote abstinence; and
2. *Mimi Na Yeye Milele* – ‘Me and my partner forever’ – to promote faithfulness

Description of Events

Event 1: Beauty pageant and concert, December 11, 2004 at UON Sports Grounds

The main theme of the event, - *Tia Zii Ni Kuzii* – was to promote abstinence. Approximately 4,000 students³ were entertained by celebrity musicians such as Nameless, Tattu, Rufftone, and Mwafrika. At the end of the day a beauty pageant was held, culminating in the crowning of “Mr. and Miss Life” who were charged with the responsibility of championing the cause of abstinence.

Over 10,000 IEC materials were distributed, of which I Choose Life-Africa materials constituted 7,350. Materials that were distributed concerned topics such as Living with HIV and AIDS (1,000), VCT (1,750), STIs (2,000), Condoms-Juala (650), Sexual Purity (1,000), and True Love Waits (1,000).

Kenyatta National Hospital (KNH) provided VCT services on site resulting in 69 students seeking information and counseling on VCT, and 28 getting tested for HIV.

Event 2: Rugby tournament, January 22, 2005 at UON Sports Grounds



A rugby tournament involving several teams popular in Nairobi (Mean Machine, Kenya Harlequins, Kenya Commercial Bank, Ulinzi, Nondis, Mwamba and Impala) was held to promote the message *Mimi Na Yeye Milele* (“Me and my partner forever”). The message was promoted by the MCs, DJs and other speakers through poems, drama/skits and testimonies from people living with HIV/AIDS during intervals or in-between games. Over 3,000 students attended the event as evidenced by the numbers of paper visors distributed courtesy of The National AIDS Control Council (NACC).

³ The number of first-year student attendees alone was not calculated for each event.

VCT services were provided by KNH, Liverpool VCT (LVCT), the Kibera Community Self-help Program (KIKOSHEP) and the Family Planning Association of Kenya (FPAK). One hundred twenty-four students visited the ten mobile VCT sites that were set up for the day. In total, 3,745 IEC materials were distributed by ICL.

Event 3: Crazy Olympics, February 19, 2005 at UON Sports Grounds.

Before this event, students were encouraged to register teams for participation in mock Olympics. Teams then competed against each other in activities such as moon walk, slippery tug of war, Norwegian football, and an obstacle race. As in previous events, messages concerning abstinence were communicated through drama/skits, poems, oral narratives, songs and testimonies from PLWHA throughout the day.



The event was attended by approximately 2,800 students. This was verified by the number of red ribbons cut and distributed to the students. VCT services were provided to approximately 86 students by LVCT and SOS VCT. A total of 2,134 pieces of IEC materials were distributed. In addition, 2,500 publicity materials which carried the message and theme of the event were

distributed to publicize the event.

Event 4: Cultural Festival, April 9, 2005 at UON Sports Grounds



The final event in the intervention was held to celebrate African culture and the role it plays in the socialization of African youth. Students were requested to put together cultural acts that were then screened and selected by ICL and FHI for the final program. A requirement for participation was that one of the key messages, abstinence or faithfulness, be present.

Approximately 1,800 students participated, and 53 visited the VCT mobile services, provided by LVCT, Kenyatta National Hospital VCT, SOS, FPAK, and KICOSHEP. The lower number of students attending is likely due to the timing of the event, which was just two weeks before mid-semester exams and dwindling interest in the events as result of audience fatigue (given that the events once per month).. One thousand IEC materials were distributed by ICL.

Thus, the intervention reached approximately 11,600 students⁴ at the main and Chiromo campuses at the University of Nairobi between December 2004 and April 2005. No edutainment events took place for the rest of the calendar year.

METHODS

Overview of study design

This study was quasi-experimental, with an intervention (n=1,049) and control group (n=1,191) and a repeated cross-sectional design. Due to the intense changes in the lives of first-year university students, which are likely to account for changes in sexual activity (such as sexual initiation) in their first year of university, there is a great likelihood of observing bias due to maturation in this population. For this reason, it is preferable to have a control group. Since it was felt that it would be impossible to find a comparable control group among other first-year university students in Nairobi, we chose second-year students as the control. This is because they represent a group of people, closest in age to first-year students, who could have been exposed to the existing ICL program, but not edutainment, in their first year at the UON.

The design is specified in Figure 1. A baseline questionnaire was administered to first- and second-year students (O₁ and O₃) from December 2004-January 2005. As described above, intervention activities were then carried out from December-April 2005 (X). Finally, a follow-up questionnaire was administered to the former first- year students as they entered their second year of university in January 2006 (O₂).⁵ We expected the outcomes of interest concerning knowledge, attitudes, and behaviors related to sexuality to be most favorable at O₁⁶ and least favorable at O₃, and we expected the intervention to affect O₂ such that the outcomes were significantly more favorable than O₃. Thus, the primary comparison was between first-year students at follow-up and second-year students at baseline (O₂ vs. O₃). These two groups are hereafter referred to as the “intervention group” and “control group.”

Figure 1: Study Design

First-year students:	O ₁	X	O ₂
Second-year students:	O ₃		
Where,	O = observation (questionnaire)		
	X = intervention		

⁴ It should be noted that it is likely not 11,600 *individuals* as some students may have attended more than one event.

⁵ We are assuming that most of the second-year students in 2006 are the same students from the baseline group of first-year students from 2004/2005; however, this assumption was not verified.

⁶ The outcomes of interest are presumed to be most favorable at O₁ because past studies have indicated that youth become more sexually active while at university.

Study Site

The study was undertaken at the main and Chiromo campuses of the University of Nairobi, which is comprised of the colleges of Architecture and Engineering, Humanities and Social Sciences, Medicine, Science, Pharmacy, and Dental Science.

Study Sample

The study sample consisted of all first and second-year students at the main and Chiromo campuses of the University of Nairobi at the beginning of the 2004-2005 academic year and second-year students at the beginning of the 2005-2006 academic year.

Eligibility

To be eligible for the study participants were required to fulfill the following inclusion criteria:

- Willing to participate in study
- First-year student status at baseline (second-year for the control group)
- Aged 18–24 years old at baseline
- Enrolled at the University of Nairobi
- Second-year students only: were enrolled at UON previous year as well.

The following participants were excluded:

- Current or former peer educator or youth counselor

Data Collection and Entry

At the beginning of the semester, trained field workers visited classrooms, explained the study, read out loud the informed consent and the eligibility criteria, and responded to any questions that the students had. Thereafter, they passed out the data collection instrument. Students who consented to participate then completed the instrument as the field worker waited. Those who did not wish to participate or who were not eligible were asked to tick a box indicating this. After the students finished completing the instrument, the field worker collected them and returned to the FHI/Nairobi office with them for data entry.

Data were then entered at the FHI/Nairobi office using EpiInfo 6.04d software, with double entry for verification. Databases were subsequently sent to the FHI/North Carolina office for quality control, querying, and analysis.

Study Outcomes

To evaluate changes in knowledge, attitudes, and intentions, the following outcomes were measured:

- Know correct definition of abstinence. Based on correct answer to open-ended question: “What is your definition of abstinence?” The correct answers that were selected were: not having sex, being celibate, staying or living without sex, 'chilling,' refraining from sexual intercourse with a person of any gender, not having (penetrative) sex either anal or vaginal, and not having sexual relations with anyone but yourself. All other responses were defined as incorrect.
- Know correct definition of faithfulness. Based on correct answer to open-ended question “What is your definition of being faithful?” The correct answers that were selected here were: having one faithful, trusted sexual partner and sticking to one partner whether having sex or not.
- Have favorable attitudes about abstinence. Composite score based on responses to three questions. Respondents get one point for each favorable answer they give. Three points possible.
- Have favorable attitudes about faithfulness. Composite score based on responses to two questions. Respondents get one point for each favorable answer they give. Two points possible.
- Have favorable attitudes about consistent condom use. Composite score based on responses to four questions. Respondents get one point for each favorable answer they give. Four points possible.
- Have favorable attitudes about responsible sexual behavior. Sum of scores on abstinence, faithfulness, and condom use. Nine points possible.

Sexual behavior was measured by:

- Primary abstinence (never had sex)
- Secondary abstinence (no sex in last 3 months)
- One partner in last 3 months
- 100% condom use in last 3 months
- Reduced-risk sexual behavior (primary or secondary abstinence or 100% condom use in last 3 months)

Data Analyses

All analyses were conducted at FHI/North Carolina in consultation with ICL’s Monitoring and Evaluation Division. The primary comparison was to assess whether, compared to second-year students at baseline, first year students at follow-up (after the intervention) were more likely to report more knowledge about abstinence and faithfulness, positive attitudes about responsible sexual behavior, and reduced-risk sexual

behaviors. These analyses controlled for sex, home of origin, marital status, religiosity and sexual experience.⁷.

The ICL intervention was directed at first-year students and was campus-wide (although anyone on campus could attend). The follow-up survey revealed that not all first-year students directly received the intervention. Therefore, we conducted supplementary analyses to determine the effect of having attended at least one edutainment event (i.e. exposure to the intervention) on knowledge, attitudes, and reduced-risk sexual behavior. To focus upon students who had an opportunity to be exposed to the intervention, analyses were restricted to the first-year students at follow-up. These analyses also controlled for potential confounding effects of sex, home of origin, marital status, religiosity and sexual experience.

Statistical Methods

For all statistical comparisons we specified a generalized estimating equation that takes the clustering within classroom into account. For the analysis, we assumed that students within a given class (i.e. BA Architecture) may be more similar than students in a different class. For dichotomous outcomes, the odds ratio and 95% confidence interval were tabulated. For continuous outcomes, the p-value from the pair-wise least square means difference was tabulated. P-values less than or equal to 0.05 (two-sided alpha) were considered statistically significant. All analyses were conducted using the statistical package SAS 9.1.

Ethical Considerations

The study was approved by the KNH Ethics and Research Committee and the Protection for Human Subjects Committee (PHSC) at FHI.

⁷ These variables were selected as covariates due to the theoretical likelihood that they could influence the outcomes significantly. This likelihood was borne out in the multivariate analyses, which revealed significant effects of most of the covariates on the outcomes of interest.

RESULTS

1. Demographic characteristics

There were few differences between the intervention and control groups at follow-up in semesters of demographic background (Table 1). The two groups were also very similar at baseline (data not shown).

Table 1: Distribution of respondents (percent) ¹ with specific demographic characteristics, by study group

Characteristic		Intervention Group		Control Group	
		Males	Females	Males	Females
Total N		639	410	752	439
Place of residence	University hall	81	66	82	72
	With parents	9	15	7	11
	Rented hostel	9	18	9	15
	Other	--	<1	<1	<1
	Missing	<1	<1	<1	1
Home of origin	Urban	43	62	39	58
	Rural	57	38	61	42
Religious Affiliation	Protestant	65	65	63	68
	Catholic	27	27	30	26
	Muslim	4	4	3	3
	African Traditional	<1	<1	2	<1
	Other	3	2	2	<1
	Missing	<1	<1	<1	<1
Religiosity - Attends Services...	At Least Once a week	64	74	62	70
	Less than Once a week	36	26	38	30
Marital Status	Married/cohabiting	4	3	2	2
	Single	96	97	98	98

¹ The complement of the percentages provided in the table includes those who did not respond to the question.

2. Knowledge of Abstinence and Faithfulness

The intervention had no effect on the ability to correctly define ‘being faithful,’ and only a small effect on ability to define ‘abstinence’ (Table 2). After the intervention the overall proportion of intervention students who could correctly define these semesters was only between 50 and 60%, with males having a slightly better understanding of ‘abstinence’ and female students slightly more likely to correctly define ‘being faithful.’

Table 2: Percent¹ of respondents with correct understanding of abstinence and faithfulness, by study group

Characteristic	Intervention Group		Control Group		Odds Ratio & 95%CI ²
	Males	Females	Males	Females	
Total N	639	410	752	439	
Correct definition of abstinence	54	49	49	43	1.26 (1.06, 1.48)
Correct definition of 'being faithful'	55	62	56	57	1.06 (0.87, 1.30)

¹ The complement of the percentages provided in the table includes those who did not respond to the question.

² Odds ratios are for the odds of the intervention group having the outcome of interest compared to the control group. The odds ratios are covariate adjusted; the dichotomous covariates are: sex (male or female), urban origin, religiosity, and marital status (married yes/no).

3. Attitudes towards Abstinence, Faithfulness, and Condom Use

Edutainment events also included messages intended to positively affect attitudes towards abstinence, faithfulness, and condom use.

There were no differences in attitudes towards abstinence or faithfulness. There was a statistically significant difference between the intervention group students and the control group students on positive attitudes about condom use and overall reduced-risk sexual behaviors, but the actual differences were small (Table 3).

Encouragingly, most students seem to know the “correct” answer to the questions. For example, around 80% of both male and female students agreed with the statement that “using a condom means that I care about myself and my partner.” In addition, overall attitude scores about responsible sexual behavior were fairly high, at least 7.2 for females and 6.6 for males (out of a possible total of 9).

Table 3: Percent¹ of respondents with positive attitudes about abstinence, faithfulness, and condom use, by study group

Characteristic	Intervention Group		Control Group		Mean Score Difference p-value ²
	Males	Females	Males	Females	
Total N	639	410	752	439	
Without sex a relationship has no meaning³ [disagree=1pt]	75	89	71	86	
I can live without sex until marriage [agree=1pt]	65	81	65	81	
Having sex proves love to my partner³ [disagree=1pt]	75	86	71	86	
Positive attitudes about Abstinence (Mean score) [Total of 3 possible]	2.1	2.6	2.1	2.5	0.12
I can be faithful to 1 partner only after marriage³ [disagree=1pt]	62	69	58	68	
It is possible to be faithful to 1 partner [agree=1pt]	85	90	86	90	
Positive attitudes about Faithfulness (Mean score) [Total of 2 possible]	1.5	1.6	1.4	1.6	0.30
Using a condom means that I do not trust my partner³ [disagree=1pt]	78	90	75	83	
I do not have to use a condom with my spouse/steady partner³ [disagree=1pt]	62	60	57	57	
If I do not have a condom I have sex anyway³ [disagree=1pt]	76	72	72	72	
Using a condom means that I care about myself and my partner [agree=1pt]	80	81	79	79	
Positive attitudes about Condom Use (Mean score) [Total of 4 possible]	3	3	2.8	2.9	0.01
Positive attitudes about Reduced-risk Sexual Behavior (Mean score) [Total of 9 possible]	6.6	7.2	6.4	7	0.008

¹ The complement of the percentages provided in the table includes those who did not respond to the question.

² P-value for the covariate-adjusted difference of intervention group mean score minus control group mean score.

³ Percent who disagreed with this statement is presented.

4. Reduced-risk Sexual Behavior

We also examined whether or not the edutainment events had an effect on actual sexual behavior (Table 4). We saw no differences between the two groups on abstinence, condom use, number of sexual partners, or reduced-risk sexual behavior. About 80% of both intervention and control group students said they were either abstinent or using condoms 100% of the time with all partners in last 3 months, with the majority reporting primary or secondary abstinence. The rest of the students were sexually active and having unprotected sex in the last three months. About one-third of sexually active intervention and control group male students said they had multiple sexual partners in the last three months. One in five sexually active female students reported multiple partners.

Table 4. Percent¹ of respondents reporting indicated sexual behavior

Characteristic	Intervention		Control		Adjusted Odds Ratios and 95% CI ²
	Males	Females	Males	Females	
Never had sex	45	71	47	68	0.98 (0.83,1.14)
Abstained in last 3 months ³	25	21	28	20	0.91 (0.68,1.21)
100% condom use with all partners ⁴	44	24	47	31	0.87 (0.70,1.07)
Reduced-risk sexual behavior in last 3 months ⁵	77	83	80	82	0.91 (0.78,1.08)
Only 1 sexual partner in last 3 months ⁴	65	81	64	82	1.00 (0.77,1.29)

¹ The complement of the percentages provided in the table includes those who did not respond to the question.

²Odds ratios are for the odds of the intervention group having the same outcome of interest compared to the control group. The odds ratios are covariate adjusted. The dichotomous covariates are sex, urban origin, religiosity, and marital status.

³ Restricted to those who have ever had sex.

⁴ Restricted to those who were not abstinent in the last 3 months.

⁵ Reduced-risk sexual behavior is defined as either abstaining (primary or secondary) or using condoms 100% with all partners in the last 3 months.

5. Exposure to the intervention

Exposure to the edutainment events affects the overall success of the intervention. That is, the lower the percentage of students that attend events, the lower we would expect the effectiveness of the intervention to be. Therefore, it is important to look at the extent to which students were exposed to the intervention, defined here as participation at one edutainment event or more. Table 5 shows the percentage of intervention group students who reported attending each of the edutainment activities, and the overall number of activities students attended.

One-third of all female and one-half of all male first-years attended at least one event. However, exposure decreased over time for both males and females. Almost 40% of the first-year male students and 22% of the female students attended the first event, which was a beauty pageant, whereas by the end of the semester only 19% of males and 12% of females attended the cultural event. On the whole, males had a consistently greater presence at the edutainment events than females.

Table 5: Percentage of intervention students who reported attending the edutainment activities (Exposure to intervention)

Characteristic		Males	Females
Total N		639	410
Number of Events Attended¹	1	14	9
	2	11	9
	3	9	6
	4	13	7
	At Least One	48	30
Type of Event Attended¹	<i>Tia zi ni kuzii</i> Concert and Beauty Pageant	37	22
	<i>Mimi nay eye milele</i> Rugby Tournament	34	17
	<i>Tia zi ni kuzii</i> Crazy Olympics	27	18
	<i>Tia zi ni kuzii</i> Cultural Event	19	12

¹ The complement of the percentages provided in these rows includes those who did not respond to the question.

Table 6 presents the results of multivariable analyses conducted to look at what kind of students attended the edutainment events. The students who were more likely to attend at least one edutainment event were male, of rural origin, and sexually experienced. Students were not more likely to be religious (i.e., attend church at least once a week) or married.

Table 6: Likelihood of Attending at Least One Edutainment Event

Odds for	Odds Ratio	95% Confidence Interval		p-value
		Lower	Upper	
Religiosity	1.05	0.80	1.38	0.74
Males	1.71	1.32	2.21	<0.0001
Urban Origin	0.58	0.47	0.73	<0.0001
Married	0.59	0.32	1.10	0.10
Ever Had Sex	1.59	1.29	1.97	<0.0001

6. Results based on exposure to intervention

The analyses presented in sections 2-4 constitute the primary evaluation of the edutainment intervention. However, we also compared first-year students who said they attended an event with those who said they did not to see if attending an event affected students' knowledge, attitudes and behavior. These results should be viewed with caution, however, because they do not control for selection bias (i.e. those students who participated in an event may have been different in some unmeasured way from students who did not).

Table 7 shows the odds of the outcomes of interest given one's attendance at one event or more. Students exposed to the intervention were 6.5 times more likely to correctly define abstinence and 3.3 times more likely to correctly define faithfulness than those not exposed.

Students who attended at least one event did not have significantly different attitudes about abstinence or faithfulness, but did have more positive attitudes about condom use and reduced-risk sexual behavior. This is consistent with the results of the intervention-control group analyses.

Students exposed to the intervention were more likely to say they had initiated sexual activity than those who did not attend an event (63% vs. 44%; data not shown). They were also less likely to report multiple partnerships in the last three months (64% vs. 75%; data not shown).

Table 7: Knowledge, Attitudes, and Actual Behavior of Those Who Said They Participated in the Intervention vs. Those who Said They Did Not.

Type of Outcome	Outcome	Odds Ratio ¹ & 95% CI or Mean Score and p-value ²
Knowledge of ICL	Definition of Abstinence	OR: 6.47 (4.93,8.49)
Messages	Definition of Faithfulness	OR: 3.25 (2.34,4.50)
Sexual Behavior	Never had sex ³	OR: 0.62 (0.49,0.78)
	Abstained in last 3 months ⁴	OR: 0.83 (0.59,1.17)
	Only 1 sexual partner in last 3 months ⁵	OR: 1.82 (1.17,2.85)
	100% condom use with all partners ⁵	OR: 1.28 (0.84,1.94)
	Reduced-risk sexual behavior ⁶	OR: 0.79 (0.59,1.05)
Attitudes	Positive Attitude About Abstinence	Mean Score is Higher, p= 0.11
	Positive Attitude About Faithfulness	Mean Score is Higher, p= 0.15
	Positive Attitude About Condom Use	Mean Score is Higher, p<0.0001
	Positive Attitude About Reduced-risk Sexual Behavior	Mean Score is Higher, p<0.0001

¹ Odds ratios are for the odds of first-year follow-up students who attended at least one event of having the outcome of interest compared to those who did not attend any events. The odds ratios are covariate adjusted. The dichotomous covariates are: gender, urban origin, religiosity, and marital status.

² Covariate adjusted mean scores were estimated for each group. These results note whether the mean score for the students who attended an event is higher or lower than the score for the students who did not and whether the difference between the two scores is significant.

³ This estimate was not adjusted for marital status

⁴ Restricted to those who have ever had sex.

⁵ Restricted to those who were not abstinent in the last 3 months.

⁶ Reduced-risk sexual behavior is defined as either abstaining (primary or secondary) or using condoms 100% with all partners in the last 3 months.

DISCUSSION

Was the intervention a success?

The edutainment intervention did not affect knowledge, attitudes or behavior of first-year students in a programmatically important way. Students in the intervention group were only slightly more likely to correctly define abstinence and have more positive attitudes towards condoms and reduced-risk sexual behavior than control students. While some differences were *statistically* significant (perhaps because of the large sample size), no *programmatically* significant intervention effect was detected. Attitudes about condom use and overall safe sex were slightly higher among intervention group students than those in the control group, although this result was unexpected because the intervention did not stress this aspect. One possible explanation is that students who attended the events were exposed to messages about condoms and their use by organizations that had booths and provided information at the events.

Why wasn't the intervention more of a success?

The lack of effect of the intervention could have been due either to a low proportion of students attending the edutainment events, because the intervention was not strong or sustained enough to induce behavior change, and/or because edutainment can not be expected to influence behavior in the short-run.

Low attendance

About one-third of the first-year students attended the first edutainment event, a beauty pageant, which was a fairly high turnout for this type of activity. However, despite this being an event that one would expect female students to be interested in, only 22% of female first-year students said they attended. Furthermore, attendance at the events by both males and females decreased with each event.

Inherent limitations of edutainment

Regardless of the effects of dwindling attendance, there is also the question of what kind of effects one can expect from edutainment. A recent review by the World Health Organization found that mass communication efforts have been found to impact on knowledge, interpersonal communication and condom use, but not increasing delay in sexual experience or decreasing the number of sexual partners that adolescents report (Bertrand and Anhang, 2006). Although this review did not specifically evaluate edutainment (primarily because rigorous evaluations of such interventions are unavailable), it points to the areas of potential impact of interventions that are intended to reach large groups of youth with health promotion messages. The evaluation results reported further point to the inherent limitations of such interventions in influencing sexual behaviors.

Complex nature of behavior change

One potential reason that behavioral effects may not be seen with edutainment interventions is the nature of behavior change, which usually requires skills-building in

areas such as negotiation and decision-making. Another reason for edutainment's lack of effect on behavior may be due to the complex nature of social change. Papa et al's (2000) careful look at the process of social change in a village in India showed that such change is often not linear, and is fraught with barriers and contradictions. Their conclusion was that edutainment can lead to increased discussion about social issues, which *may* then lead to a collective belief that changing behaviors is possible. However, not all those exposed will adopt the desired behaviors and some may even negatively change their behaviors. Furthermore, it seems that a critical mass is needed before such a collective efficacy to change behaviors can be seen. That is, the majority of the target community needs to be exposed to the messages, and engaged in discussions about them before individuals will adapt the behaviors modeled in the edutainment intervention. This is supported by YouthNet's research on the MTV *Staying Alive* media campaign, which found an increase in interpersonal communication on HIV/AIDS, which then seems to have influenced social norms as measured in the study (Waszak Geary et al, 2005). The UON intervention, with its low coverage, probably did not reach such a critical mass, and therefore was unlikely to spark widespread discussion or feelings of collective efficacy among the students.

What are we left with?

Although the primary analyses of this study do not support a scale-up of edutainment activities promoting AB messages on the UON campus, there are indications that we should take a closer look at the students who attend such events. The sub-analyses indicated that students who attended at least one event were more likely than those who did not to say that they had one partner or fewer in the three months preceding the survey. Despite this, we cannot draw the conclusion that the intervention influenced partner reduction because these analyses were based on first-year students alone with no control group. This means that other factors could have accounted for this difference, the most likely being that students who attended the events were different in some unmeasured way than those who did not attend. However, the results do provide some justification of further exploration into the motivations of students to attend such events in order to inform future programming.

Additionally, regardless of the challenges of edutainment, and the effectiveness of the ICL intervention, the results of these surveys point to a continued need for additional HIV risk-reduction strategies on campus. For example, amongst the female intervention students, 50% could not correctly define abstinence and 38% could not correctly define faithfulness, although considerable effort has been exerted in helping UON students understand these concepts. In addition, although the majority of students said they were abstaining, amongst those who were sexually active we saw high levels of multiple sexual partnerships and unprotected sex. Thus, it is possible that students may see sex as an "either/or" activity: abstain or throw caution to the wind.

Limitations and Strengths

One limitation of this evaluation was the short intervention period. A four-month intervention period is probably too short to see effects on behavior. Instead, it is preferable that behavioral programs are sustained over a longer period of time. In fact, the edutainment events were scheduled to continue several more months but due to students going on break and funding considerations, only four events were held. There also appeared to be a growing “fatigue” with the events, as evidenced by the drop in attendance. Furthermore, the follow-up survey was administered eight months after the last edutainment event (in order for first-year students to be comparable to the baseline second-year students in semesters of life experience). Thus, the strength of the intervention was likely attenuated by these factors. On the other hand, resources for such intensive interventions are not unlimited. It could be argued that if the effects of edutainment wear off so quickly it may not be cost-effective to invest in such efforts in the absence of complementary behavioral interventions. Additionally, this would indicate that edutainment events such as the one carried out here are best seen as having short-semester effects to raise awareness. This awareness then needs to be built on by more in-depth, long-semester interventions such as interpersonal communication.

Another limitation of this evaluation is the likelihood of bias due to respondents “knowing” what the evaluators want to hear and not responding the way they honestly feel (i.e., “social desirability”). This is most likely to happen with questions about attitudes or behaviors, particularly if one has been exposed to messages (as students who attended the events were) about how one *should* feel or act. For example, in this survey, students were asked to agree or disagree with the statement “Using a condom means that I care about myself and my partner.” It is difficult to imagine a 19 year old in Nairobi, with its multitude of billboards and media sources, who has not been exposed to positive messages about condoms and why they should be used. Students in such situations are unlikely to answer negatively to such positive sounding statements on questionnaires. In fact, 80% of the respondents in this survey responded positively to this statement. Although one would expect such bias to be roughly equal across the study groups due to similar exposure to messages in society, we cannot assume this in this assessment since students who attended the events were theoretically exposed to the messages to a greater degree.

A strength of this evaluation is its design. Although students were not followed-up individually, the use of a well-chosen control group lends some confidence to the results. The control group that we selected was/had been: 1) from the same campus, 2) exposed to the peer education program prior to the introduction of the edutainment component, and 3) similar to the intervention group at follow-up in semesters of maturation. In addition, comparisons of the control group with the intervention group at baseline⁸ showed that they were similar demographically, and that the maturational changes that we expected had occurred. Hence, we are inclined to believe that this group serves as a good control group, and that any differences we observed between study groups were

⁸ These baseline data are not shown here but are available on request.

likely due to the intervention and not just on the changes that students experience in their first year of university.

Recommendations

Based on the above discussion, and keeping in mind the strengths and limitations of the evaluation, we recommend the following:

- *A package of interventions* is likely needed in order to be able to effectively address the students who display risky sexual behaviors. The edutainment intervention alone did not have an effect on behavior, and only a marginal effect on knowledge and awareness. Knowledge and awareness are not sufficient to change behavior. Students also need to learn *skills* in order to put their knowledge to work. Such skills may be best communicated through interpersonal methods, such as peer education or small group discussions. For this reason, the ICL program has trained its peer educators in life skills and instigated a rigorous supervision system in an attempt to increase the likelihood that students at the UON gain the skills necessary to change their behaviors. A careful evaluation of this new strategy may provide more answers about the effectiveness of this strategy in reducing risky sexual behaviors.
- *Condoms and condom-negotiating skills* must be promoted and provided to UON students more than they currently are. This study showed that students are highly receptive to messages on condom use and have positive attitudes about them. However, sexually active students are not protecting themselves against STIs/HIV. This gap between attitudes and use is likely due to lack of skills in negotiating condom use and possibly a lack of access. For students to have the tools they need to protect themselves from STIs, HIV, and unintended pregnancy, condoms need to be widely available on campus and students, particularly females, need to be offered an opportunity to gain and improve condom negotiation skills.
- *Other strategies are needed for female students.* Males were more likely to attend events than female students. On the one hand, this is positive because it provides an opportunity to reach men with messages about taking responsibility for sexual relationships, and their partners' sexual health. However, other strategies for responding to the needs of females to assert themselves and negotiate safer sex with males are needed to complement edutainment.
- *More research* is needed to better understand how to design messages to students that will allow them to properly evaluate risk. While many students said they were primarily or secondarily abstinent, those students who were sexually active often exhibited more than one risky behavior, such as multiple sexual partnerships and non-use of condoms. Messages that say abstinence is the only guaranteed way to avoid HIV might make students feel that if they fail to be abstinent, they have

abandoned their only healthy option. This belief might subsequently lead them to engage in multiple partnerships and unprotected sex. A better understanding of the way young people evaluate their risk would help us develop messages that respond to this myth.

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Appendix 1: List of Organizations Participating in Edutainment Events

1. I Choose Life- Africa
2. Family Health International
3. Medical Students Against AIDS (MESA)
4. Family Planning Association of Kenya (FPAK)
5. Family Program Promotion services (FPPS)
6. Population Services International (PSI)
7. Kenyatta National Hospital
8. Pathfinder International / Kenyatta University Peer counselors
9. Nairobi Youth Centre
10. National AIDS Control Council
11. GTZ
12. St. Johns Ambulance
13. University Of Nairobi Red Cross Society
14. Kenya Girl Guides Association
15. HOPE Worldwide- Sent a representative to attend
16. Liverpool VCT
17. Wired International
18. Celltel
19. KIKOSHEP (Kibera Community Self Help Program)
20. HOPE Worldwide
21. Kenya Girl Guides Association (KGGA)
22. NOPE (National Organization of Peer Educators)
23. PATH
24. Africa Youth Parliament (AYP)
25. SOS VCT,
26. Safaricom
27. National AIDS Control project (NASCOP)