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Preliminary Impacts of an HIV-Prevention Program Targeting Out-of-School Youth in Postconflict Liberia

Stephen B. Kennedy, MD[1,2], Katherine Atwood, DSc[2], Albert O. Harris, MSc[1], Curtis H. Taylor, BSc[1], Steve Shamblen, PhD[2], Wede M. Nagbe, BSc[1], Mawen E. Gobeh, BBA[1], Fred Sosu, BSc[1], Jemee K. Tegli, MSc[1], and Cecelia A. Morris, MSN[1]

Abstract

Adolescents in Sub-Saharan Africa account for greater HIV/STI (human immuno defiency virus/sexually transmitted infection) burdens and difficult-to-reach populations. This study implemented a community-based HIV/STI program to reach at-risk youth aged 15 to 17 years in postconflict Liberia. Using a randomized controlled trial, community youths were assigned to an adapted version of an effective HIV/STI program, Making Proud Choices, or attention-matched comparison curriculum, General Health Program. Both programs were of similar doses, reach and coverage, and administered in classroom settings by trained health educators. The findings suggest that the adapted HIV/STI program had positive effects on knowledge, sexual refusal and condom use self-efficacy, condom negotiation self-efficacy, positive condom attitudes, parental communication about sex, and negative condom attitudes over time. Culturally adapted community-based, behavioral-driven programs can positively affect mediators of sexual behaviors in at-risk adolescents in postconflict settings. This is the first published report of an evidence-based HIV/STI program on sexual risk-taking behaviors of community youths in Liberia.

Keywords

HIV/STIs, Liberia, risk behavior, out-of-school, postconflict setting, youth, Sub-Saharan Africa, intervention program, adolescent, randomized controlled trials

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Introduction

Young people between the ages 15 and 24 years account for half of all new HIV (human immunodeficiency virus) infections in Sub-Saharan Africa (SSA).[1] Out-of-school youth have been associated with early sexual debut, multiple sex partnerships, frequency of sex, and low condom use.[2] Only 8% of out-of-school youth have access to HIV-prevention programs in SSA compared with 30% of in-school youth.[3] Due to the protective effect that educational attainment may confer,[4] a renewed focus on reaching this at-risk population, out-of-school youth, is highly warranted.

As noted by Nobelius et al,[5] there are numerous reasons why interventions targeting out-of-school youth are limited. This population is often difficult to locate, has work demands making it difficult to engage them in programing, is often illiterate making survey completion difficult, and lacks reliable infrastructures like schools where programing and data collection can take place. As a result, the majority of HIV-prevention programs target in-school youth.[6]

In Liberia, which emerged from 2 decades of civil war in 2005, HIV surveillance and prevention efforts are just emerging.[7-9] The HIV infection rate in Monrovia,

[1]UL-PIRE Africa Center, University of Liberia, Monrovia, Liberia
[2]Pacific Institute for Research & Evaluation, Louisville Center, Louisville, KY, USA

Corresponding Author:
Stephen B. Kennedy, UL-PIRE Africa Center, HIV/AIDS Prevention Research Center, University of Liberia, Ground Floor, Graduate School Building, Monrovia, Liberia.
Email: kennedy@ul-pireafrica.org

the nation's capital and commercial hub, is 2.8% for women and 2.1% for men,[10] while prevalence rates for women who visited antenatal clinics declined from 5.7% to 2.5%.[11] Although a majority of young people engage in sexual intercourse, few use condoms. Among unmarried 15- to 19-year-olds, 73% of females and 50% of males reported ever having had sex, with only 12% of females and 15% of males reported using a condom at last sexual intercourse.[12]

To our knowledge, there are no evidence-based HIV-prevention interventions for out-of-school youth in Liberia,[13] despite postconflict conditions that may place this population at risk for HIV infection and early pregnancy. During the 2 decades of civil conflict, schools were essentially closed resulting in a large, uneducated, young adult population. With a destroyed military and police force, international peacekeeping forces have been deployed to maintain peace and to rebuild governmental offices and systems. Indigenous entertainment industries have developed in their wake creating "peacekeeping economies," which provides access to potential sex partners of relative wealth and access to needed resources,[14] increasing risks of HIV infection to the domestic populations.[15] Child soldiers, once conscripted into Liberia's civil conflict, have now reached adulthood with little education or employable skills.[16] They may also serve as potential, high-risk sex partners for Liberian youth. Qualitative interviews with Liberian youth indicate transactional sex is often promoted by family members and peers to obtain basic resources and Western commodities.[17] Transactional sex tends to occur in aged-discordant relationships where condom use is unlikely due to power differentials and fears of sexual violence.[17]

To address the needs of out-of-school youth in Liberia, we adapted an evidence-based HIV prevention intervention, *Making Proud Choices!* (MPC)[18] to the needs of these youth. Based on social cognitive theory[19] and the theory of reasoned action,[20] the program sought to promote positive condom attitudes and increase skills and self-efficacy to refuse sex, negotiate condom use, and use condoms effectively.[18] A US-based randomized trial found increases in condom use and a delay in sexual initiation among inner-city adolescents exposed to MPC.[18]

We present 3- and 6-month longitudinal findings of the intervention's impact on HIV/AIDS-related knowledge, peer norms, sexual attitudes, and sexual behaviors including sexual initiation, condom use frequency, number of sex partnerships, and frequency of sex. To our knowledge, this is the first report of the effects of an evidence-based HIV-prevention curriculum on the sexual risk-taking behaviors of out-of-school youth in Liberia.

Study Design

The study was a community-based randomized controlled trial (RCT), similar in research design and scope to a prior school-based RCT.[21] Youth were randomly assigned to the adapted MPC[18] or an attention-matched General Health Comparison Curriculum. Both curricula were 8 sessions in length and led by trained health educators. The General Health Comparison Curriculum included health information on malaria, tuberculosis, worm infestations, and HIV/STI (sexually transmitted infection) knowledge but was not skills-based nor included an underlying behavioral theory.[22]

The eligibility criteria included 15- to 17-year-olds, living in Monrovia or the surrounding communities, who understood sixth-grade–level English and could provide reliable information about the location of their home. Data for this analysis are based on the baseline and 3- and 6-month surveys administered to enrolled youth.

Recruitment

To provide geographic representation of youth, Monrovia and its surrounding neighborhoods were separated into 4 zones. Participants were randomly selected from each zone using a stratified random sampling design. Probability of selection reflected the underlying gender and age distribution of each demarcated zone based on the Liberian Health and Demographic Survey.[11,12] Recruitment was monitored to ensure spatial representation of participants across the 4 zones.

Ongoing recruitment from community centers, churches, and youth-serving organizations occurred from 2007 to 2009. Among those who communicated an interest in the study, outreach workers visited homes to answer questions about the study and to obtain written parental consent. Study protocols were approved by the institutional review boards of the Pacific Institute for Research & Evaluation in the United States of America and the University of Liberia in Monrovia, Liberia.

Forty-five percent (n = 892) of the 2000 youth met our eligibility criteria. Of the 892 potential participants, 80% (715) provided signed consent forms, and of this group, 704 completed the baseline self-report survey (79% of eligible participants).

Survey Measures

The baseline survey was pilot tested with 20 youth not included in the RCT to assess face validity, item clarity, and age appropriateness and was modified accordingly.

The self-report paper-and-pencil survey measured participant background characteristics, as well as behaviors, norms, and attitudes targeted by the intervention. Unless otherwise noted, scale scores for multi-item measures were calculated by taking the average of all items measuring a construct. Cronbach's α is reported for each multi-item scale from our sample population. The key outcomes variables are described below.

HIV/AIDS-Related Knowledge. A 21-item HIV/AIDS-related knowledge scale, adapted from St Lawrence et al,[23] was used (Cronbach's α = .77).

Sexual Refusal Self-Efficacy. A 7-item sexual refusal self-efficacy scale, adapted from Donohew et al,[24] was used, which included items such as "How sure you are able to say no to having sex with someone you want to date again?" Responses ranged from 1 = "I definitely cannot do this" to 5 = "I definitely can do this"; Cronbach's α = .80.

Condom Use Self-Efficacy. A 4-item condom use self-efficacy scale, adapted from Brien et al,[25] was used including statements such as "I feel confident that I could use a condom correctly" (Cronbach's α = .70). Responses ranged from 1 = "I definitely cannot do this" to 5 = "I definitely can do this."

Condom Negotiation Self-Efficacy. A 6-item condom negotiation self-efficacy scale, adapted from Zimmerman et al,[26] was part of the survey and included items such as "How sure are you that you would talk about using condoms with any sexual partner?" Response categories ranged from 0 = "I definitely cannot do this" to 4 = "I definitely can do this" (Cronbach's α = .78).

Peer Norms Favoring Abstinence. A 6-item peer norms scale, adapted from Floyd,[27] was included in the survey asking about perceived peer sexual activity (eg, "Most of my friends are waiting until they are older to have sex"; response categories ranging from 1 = "Disagree a lot" to 5 = "Agree a lot"; Cronbach's α = .65).

Positive Condom Attitudes. A 5-item condom attitude scale, adapted from Jemmott et al,[18] was used to assess positive attitudes toward condom use. It included statements such as "Using condoms during sex would make me feel safer." Responses categories ranged from 1 = "Disagree a lot" to 5 = "Agree a lot"; (Cronbach's α = .82).

Negative Condom Attitudes. A 5-item negative condom attitude scale, adapted from Jemmott et al,[18] was used, including statements such as "Using condoms during sex would be a lot of trouble," with response categories ranging from 1 = "Disagree a lot" to 5 = "Agree a lot"; Cronbach's α = .73.

Parental Communication About Sex. A 7-item parent/child communication about sex scale, adapted from Dilorio et al,[28] was used (eg, "How often have you talked to your parents about waiting to have sex?"). Response categories ranged from 1 = "Never" to 5 = "A lot of the time"; Cronbach's α = 0.80.

Condom Use Intentions. Condom use intentions was calculated by taking the average of 2 items inquiring about perceived condom use ("In the next 3 months, do you plan on using condoms when you have sex with your main boyfriend or girlfriend?" and "In the next 3 months, do you plan on using condoms if you have sex with someone who is not your main boyfriend or girlfriend?"), where participants responded on a 1= "Never" to 5 = "Every time" response scale.

Frequency of Sex. Frequency of sex in the past 3 months was measured with a single item ("In the past 3 months, how many times did you have sex?"). Responses were measured with a series of frequency ranges that made the response scale ordinal, as opposed to interval. As such, we transformed 1 = "none" to 0, and we transformed 5 = "10 or more times" to 10. We took the middle of the response range for the remainder of the ranges: 1.5, 4.0, and 7.5. Thus, the resulting scale approximates a ratio scale representing the number of sexual occurrences.

Number of Sex Partners. The number of sex partnerships in the past 3 months was measured as a single item ("In the past 3 months, how many boys or girls did you have sex with?"). Again, the possible responses were in an ordinal format, so we transformed the variable to approximate a ratio scale. We transformed 1 = "none" to 0, and we transformed 5 = "10 or more times" to 10. The remainder of the categories was recoded as the middle of the range: 1.0, 2.5, 4.5, and 7.5. Again, this approximates a ratio scale of number of sexual partners from the ordinal responses provided.

Condom Use Frequency. Condom use frequency in the past 3 months was calculated by taking the average of 2 items inquiring about actual condom use ("In the past 3 months, were condoms used when you had sex with your main boyfriend or girlfriend" and "In the past 3 months, were condoms used when you had sex with someone who was not your main boyfriend or

girlfriend"), where participants responded on a 1 = "Never" to 5 = "Every time" response scale.

Study Attrition

The participants for this analysis included the 353 students participating in the comparison condition and 351 students participating in the intervention condition. These participants were split into 12 separate cohorts with 61 modal participants (mean [M] = 58.67) within each cohort. The participants were between the ages of 15 and 17 (M = 16.03), and 50% of the participants were male. Considering potential characteristics that may affect study results, 41% of the participants were sexually active at baseline, 50% of the sample had a boyfriend/girlfriend at baseline, and 16% of the participants at baseline reported ever having an STI. Attrition from the study was relatively low studywide with 5% not appearing in the data at immediate posttest, 7% not appearing in the data at 3-month follow-up, and 8% not appearing in the data at 6-month follow-up.

Analysis

Our analysis for the present study consisted of 3 steps: (1) imputing missing background/nuisance variable data, (2) ruling out potential study confounds, and (3) substantive analysis of intervention effects. First, we imputed missing data for background and nuisance characteristics only with these being the only variables entered into the model using the expectation maximization algorithm.[29] The expectation maximization algorithm attempts to maintain maximum similarity between the observed and imputed covariance matrices, while avoiding the shortcomings of other techniques that artificially reduce standard errors (eg, mean imputation). Missing data were minimal (less than 5% for any variable), and the consequences of imputing these data were minimal, as there was no evidence to suggest that the data were not missing completely at random using Little's test, $\chi^2(6) = 7.78$, $P = .26$. Furthermore, we felt that the potential inferential risks of eliminating entire cases based only on one missing background/nuisance variable were greater than the risks of imputing the data in the present context.

Second, we wished to rule out alternative explanations for potential study findings. Specifically, we were concerned with ruling out selectivity biases (ie, assignment, attrition, and attrition by assignment) and baseline nonequivalence as alternative explanations. We examined potential study confounds using a Heckman[30] 2-step approach, where we examined age, gender, cohort of participation, having a boyfriend/girlfriend at baseline, and ever having had STI at baseline as predictors of intervention status, attrition at any wave, and attrition by intervention status (ie, having dropped out of the intervention group at any time) in 3 separate analyses using probit regression models. None of these predictors were significant ($P < .05$) in any of the 3 analyses, providing no evidence of selectivity biases. As such, we did not create a selectivity correction covariate to be included in our models.

We next examined whether there was baseline nonequivalence on the outcomes examined at baseline. There was no evidence (ie, $P \geq .05$) to suggest that there was nonequivalence on nearly all of the outcomes examined using dependent groups t tests, except there were differences suggesting the control participants were less likely to indicate that they would use condoms in the next 3 months (M = 3.58) than intervention participants (M = 3.90), $t(337) = -2.63$, $P = .01$, and the control participants were less likely to indicate that they used condoms in the past 3 months (M = 3.00) than intervention participants (M = 3.45), $t(303) = -2.79$, $P = .01$. The former is not of concern, as is discussed later, there were no intervention effects for next 3-month condom use. However, the later is of concern, as we did have an effect suggesting intervention effectiveness on past 3-month condom use. Nevertheless, this is likely not a cause for concern, as (1) true random assignment was used and (2) this effect persisted when controlling for the background characteristics used in the Heckman[30] selectivity bias analysis.

Finally, our main analyses were concerned with whether there were positive changes over time among those who participated in the intervention group, relative to those who participated in the comparison group. Hierarchical linear modeling was used to deal with multiple observations being nested within each participant (ie, multiple wave repeated observations) for these analyses. Although simpler general linear models can be used to handle these data, hierarchical linear modeling performed in this manner confers the benefits of being able to use all of the data, regardless of whether a participant has all 3 repeated observations,[31] and this approach is more consistent with an intent-to-treat approach. All models were posed as random intercept models, which assume that variability may arise among individuals due to nesting.

At level 1 (ie, the repeated observation level), all outcomes were seen as being predicted by an intercept and an orthogonally coded linear (−3, −1, 1, 3) contrast:

$$Outcome = \pi_0 + \pi_1 (Time)$$

At level 2 (ie, the individual level), the level 1 intercept was seen as being predicted by a coded contrast (−1 vs 1)

Table 1. Cell Means for Study Outcomes by Time and Assignment Status.

	Comparison				Intervention			
	Baseline	Post	3 Months	6 Months	Baseline	Post	3 Months	6 Months
HIV/STI knowledge (0-21)	9.55	10.47	10.59	10.54	10.15	14.02	14.06	13.94
Likelihood of ever getting STI other than AIDS/HIV (1-5)	1.87	1.86	1.76	1.77	2.02	1.78	1.79	1.76
Likelihood of ever getting AIDS/HIV (1-5)	1.80	1.66	1.65	1.63	1.83	1.69	1.60	1.75
Sexual refusal self-efficacy (1-5)	3.64	3.60	3.60	3.64	3.65	3.93	3.93	3.99
Condom use self-efficacy (1-5)	3.06	3.28	3.32	3.40	3.19	3.73	3.79	3.85
Condom negotiation self-efficacy (1-5)	3.45	3.56	3.57	3.70	3.53	4.00	4.03	3.99
Peer norms favoring abstinence (1-5)	2.70	2.73	2.58	2.52	2.68	2.65	2.56	2.54
Positive condom attitudes (1-5)	3.63	3.79	3.78	3.81	3.75	4.32	4.24	4.19
Negative condom attitudes (1-5)	2.75	2.71	2.62	2.66	2.64	2.31	2.25	2.22
Parental communication (1-5)	1.88	2.01	2.17	2.24	1.93	2.30	2.50	2.56
Past 3 months frequency of sex	0.78	0.66	0.98	1.03	0.74	0.83	0.97	1.09
Past 3 months number of sex partners	0.52	0.47	0.59	0.64	0.43	0.47	0.51	0.52
Next 3 months condom use frequency. (1-5)[a]	3.29	3.47	3.58	3.63	3.48	3.86	3.90	3.72
Past 3 months condom use frequency. (1-5)[a]	2.74	2.55	3.00	2.99	2.63	2.79	3.45	3.41

[a]These analyses were restricted to those who were sexually active during at least one time point of observation.

representing the intervention group and our estimate of random variability:

$$\pi_0 = \beta_{00} + \beta_{01}\left(Intervention\right) + r_0$$

The remaining level 2 equation represented the cross-level interaction between time and intervention group:

$$\pi_1 = \beta_{10} + \beta_{11}\left(Intervention\right)$$

We calculated effect sizes (r) for these models using the formula reported in Cohen[32]: $r = [t^2/(t^2 + df)]$.[5] Only those who were sexually active at any point in the study were examined in our models examining past and next 3-month condom use.

We also initially explored whether the addition of quadratic contrasts and the interaction between the quadratic and intervention contrasts provided a model that better fit the data. In all cases except two, the interaction between intervention and the linear contrast had a stronger effect based on effect size than the interaction between intervention and the quadratic contrast. The 2 exceptions were that for condom negotiation self-efficacy, the linear by intervention interaction ($r = 0.06$) was somewhat weaker than the quadratic by intervention interaction ($r = -0.09$), and for positive condom attitudes, the linear by intervention interaction ($r = 0.07$) was somewhat weaker than the quadratic by intervention interaction ($r = -0.10$). As these differences were small, the linear effects always remained significant, and the linear model provides a more parsimonious characterization of the data, the final reported models only examined linear trends, as described in the models previously explicated.

We also examined differences between the intervention and control groups in sexual initiation, only among those who had not initiated sex by baseline. Differences between the intervention and comparison groups were examined at immediate posttest, 3-month follow-up, and 6-month follow-up using 3 Mantel-Haenszel common odds ratio tests for each of the waves. All models were run using SPSS 18.0.

Results

Our models suggested that there are changes over time on all of the outcomes examined when looking at both the intervention and comparison groups. Specifically, as can be seen in Tables 1 and 2, there were decreases over time in the perceived likelihood of ever getting an STI other than AIDS/HIV, the perceived likelihood of ever getting AIDS/HIV, peer norms favoring abstinence, and negative condom attitudes. There were increases over time in HIV/STI knowledge, sexual refusal self-efficacy,

Table 2. Unstandardized Coefficients and Effect Sizes (*r*) for Intervention Effects.

	Intercept	Intervention	Time	Interaction	Random Effect
HIV/STI knowledge (0-21)	11.63 (0.96)**	1.38 (0.39)**	0.36 (0.32)**	0.21 (0.19)**	8.89 (0.54)**
Likelihood of ever getting STI other than AIDS/HIV (1-5)	1.83 (0.92)**	0.01 (0.01)	−0.03 (−0.09)**	−0.01 (−0.03)	0.36 (0.32)**
Likelihood of ever getting AIDS/HIV (1-5)	1.70 (0.92)**	0.01 (0.02)	−0.02 (−0.06)**	0.01 (0.02)	0.35 (0.32)**
Sexual refusal self-efficacy (1-5)	3.75 (0.98)**	0.13 (0.17)**	0.03 (0.10)**	0.02 (0.09)**	0.44 (0.47)**
Condom use self-efficacy (1-5)	3.45 (0.98)**	0.19 (0.25)**	0.08 (0.25)**	0.03 (0.09)**	0.39 (0.41)**
Condom negotiation self-efficacy (1-5)	3.72 (0.97)**	0.17 (0.19)**	0.05 (0.17)**	0.02 (0.06)*	0.61 (0.49)**
Peer norms favoring abstinence (1-5)	2.62 (0.97)**	−0.01 (−0.02)	−0.03 (−0.13)**	0.00 (0.02)	0.30 (0.50)**
Positive condom attitudes (1-5)	3.93 (0.98)**	0.19 (0.25)**	0.04 (0.16)**	0.02 (0.07)**	0.42 (0.46)**
Negative condom attitudes (1-5)	2.53 (0.96)**	−0.17 (−0.22)**	−0.04 (−0.15)**	−0.02 (−0.09)**	0.41 (0.45)**
Parental communication (1-5)	2.20 (0.93)**	0.12 (0.14)**	0.08 (0.27)**	0.02 (0.07)**	0.56 (0.49)**
Past 3 month frequency of sex	0.89 (0.54)**	0.01 (0.01)	0.05 (0.11)**	0.00 (0.01)	1.50 (0.48)**
Past 3 month number of sex partners	0.52 (0.55)**	−0.04 (−0.05)	0.02 (0.07)**	−0.01 (−0.02)	0.48 (0.43)**
Next 3 month condom use frequency (1-5)[a]	3.60 (0.97)**	0.11 (0.13)**	0.05 (0.13)**	−0.01 (−0.02)	0.51 (0.30)**
Past 3 month condom use frequency (1-5)[a]	2.90 (0.93)**	0.12 (0.11)*	0.10 (0.22)**	0.04 (0.09)**	0.91 (0.31)**

[a]These analyses were restricted to those who were sexually active during at least one time point of observation; effect sizes were calculated as $r = [t^2/(t^2 + df)]$ (Cohen[5]); for random effects, the variance estimate is listed first and ρ is listed parenthetically.
**$P < .01$. *$P < .05$. $^{+}P < .10$.

condom use self-efficacy, condom negotiation self-efficacy, positive condom attitudes, parental communication about sex, and intentions to use condoms in the next 3 months. Effects on sexual risk behaviors included reduction in the frequency of sex, reduction in the number of sex partners, and increases in condom use in the last 3 months.

Examining interaction effects, there were small magnitude effects suggesting that the intervention group exhibited positive increases over time on HIV/STI knowledge, sexual refusal self-efficacy, condom use self-efficacy, condom negotiation self-efficacy, positive condom attitudes, and parental communication. Similarly, negative condom attitudes remained relatively constant in the comparison group; however, they decreased in the intervention group.

Regarding the interventions impact on sexual behaviors, we found significant impacts on past 3-month condom use frequency in the intervention group, whereas the increase in the comparison group was much smaller.

There was no evidence to suggest that comparison and intervention groups differed in reported sexual initiation at the 3-month follow-up (23% vs 28%, odds ratio = 1.33, $P = .23$), or 6-month follow-up (25% vs 27%, odds ratio = 1.11, $P = .66$; data not shown). We also did not see an impact from the intervention on the number of sex partnerships or frequency of sexual intercourse in the past 3 months (Table 2).

Discussion

Our findings suggest that our intervention had a significant impact on increasing HIV/STI knowledge and significant but smaller magnitude of effects on almost all other mediators including increasing sexual refusal self-efficacy, condom use self-efficacy, condom negotiation self-efficacy, positive condom attitudes, and parental communication about sex and reducing negative condom attitudes over time. The intervention did not impact condom use intentions.

With regard to the past 3-month sexual behaviors, our intervention significantly increased condom use frequency over time, consistent with Jemmott's original findings with minority adolescents in the United States.[18] However, in studies of adolescents in SSA, condom use has remained a critical, but unlikely outcome.[33,34]

Our intervention did not reduce sexual initiation rates, number of sex partnerships, or frequency of sexual intercourse over time. In an HIV-prevention intervention targeting adolescents in South Africa, Jemmott et al[35]

reduced frequency of unprotected sex, multiple sex partnerships, and but not sexual initiation. A life skills education program in South Africa (n = 2222) found increases in condom use but not on sexual initiation or number of sex partners.[36]

Limitations

The data for this study were based on self-report survey and therefore is subject to social desirability. Although participants were selected using a random sampling design across geographically defined zones in Monrovia and recruitment was monitored for geographic representation, our findings cannot be extrapolated to the larger population of urban youth in Liberia.

The study, however, has several methodological strengths: the program has a strong underlying behavioral framework, incorporates interactive teaching methods and skill building exercises, utilizes a RCT design with students assigned to condition, and has high consent and follow-up rates.

Conclusion

Although our intervention had a significant impact on mediators of sexual behaviors and condom use frequency over time, it did not affect other sexual outcomes including multiple sex partnerships, frequency of sexual intercourse, or sexual initiation. Future research in postconflict settings like Liberia should consider the impact of population displacement, collapse of social infrastructures, and peacekeeping economies that may potentially affect sexual norms.[37] To address these behaviors, interventions should be more carefully aligned with sexual pressures young people face in SSA,[38] especially in postconflict settings.[37]

Author Contributions

SBK: Wrote the first draft, reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
KA: Wrote the first draft, reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
AOH: Reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
CHT: Reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
SS: Wrote the statistical section including the analysis, reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
WMN: Reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
MEG: Reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
FS: Reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
JKT: Reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.
CAM: Reviewed and approved the final version, developed the concept for the study and implemented the RCT in diverse roles.

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