



Published in final edited form as:

AIDS Educ Prev. 2007 December ; 19(6): 479–488. doi:10.1521/aeap.2007.19.6.479.

GENDER–SPECIFIC HIV PREVENTION WITH URBAN EARLY-ADOLESCENT GIRLS: OUTCOMES OF THE KEEPIN’ IT SAFE PROGRAM

Jennifer Di Noia and Steven P. Schinke

Jennifer Di Noia is an associate research scientist and Steven Schinke is a professor, Columbia University School of Social Work, New York

Abstract

This study evaluates the efficacy of Keepin’ It Safe, a theory-based, gender-specific, CD-ROM-mediated HIV prevention program for urban, early adolescent girls. Intervention effects were examined in a randomized, pretest–posttest wait–list control-group design. Changes in HIV/AIDS knowledge, protective attitudes, and skills for reducing HIV risk-related sexual behaviors were tested using linear regression models that were controlled for baseline values of each outcome. Recruited through youth services agencies located in the greater New York City area, study participants comprised 204 adolescent girls aged 11–14 years. Girls exposed to Keepin’ It Safe, relative to wait–list control girls, increased their HIV/AIDS knowledge, perceived efficacy and enjoyment of abstinence, perceived efficacy and enjoyment of condoms, and sexual assertiveness, suggesting that a theory-based, gender-specific, CD-ROM-mediated HIV prevention program can enhance knowledge, protective attitudes, and skills for reducing HIV risk-related sexual behaviors among urban early-adolescent girls.

Although HIV diagnoses among women decreased slightly from 1984 through 1998, the number of cases acquired through heterosexual contact in young women more than doubled during this period (Centers for Disease Control and Prevention [CDC], 2006). Females aged 13–19 years account for 89% of recently heterosexually acquired HIV infections (CDC, 2004). Because most young women contract HIV via sexual transmission, prevention programs for adolescent girls aimed at reducing sexual behaviors associated with the acquisition and transmission of HIV are needed to reduce the incidence of this life-threatening and debilitating disease. Although investigators are beginning to respond to this need, HIV prevention programs expressly designed for and tested with adolescent girls are few (DiClemente et al., 2004; Downs et al., 2004; Koniak–Griffin, Lesser, Nyamathi, et al., 2003; Morrison–Beedy, Carey, Kowalski, & Tu, 2004; Scholes et al., 2003; Shrier et al., 2001).

Keepin’ It Safe is a six-session, gender-specific, CD-ROM-mediated HIV prevention program for urban early-adolescent girls. The program is based on the AIDS risk reduction model (ARRM), a three-stage model of harm reduction that integrates concepts from the health belief model, the theory of reasoned action, the theory of planned behavior, self-efficacy theory, emotional influences, and interpersonal processes to explain individual efforts to avoid contracting HIV through sexual contact (Catania, Kegeles, & Coates, 1990). According to the ARRM, to avoid HIV infection, individuals engaging in sexual risk behaviors must perceive their actions as problematic, commit to changing the behaviors, and take action to do so

(Catania et al., 1990). These interrelated processes correspond to labeling, commitment, and action ARRM stages.

Keepin' It Safe targets ARRM variables hypothesized to influence goal attainment at each stage. The first two sessions aim to increase HIV/AIDS knowledge and perceived vulnerability to HIV infection, factors that increase the ability to recognize and label risky sexual behaviors as problematic. The second and third sessions address the following key determinants of the commitment to changing high-risk behaviors: the perceived enjoyment of low-risk activities, the perceived efficacy of these activities in achieving risk reduction, and self-efficacy for low-risk activities. The final two sessions aim to increase sexual communication and assertiveness skills for enacting low-risk behaviors, and promote norms favoring partner involvement in low-risk activities.

Multiple media (i.e., digital video, graphics, animation, sound, and text) are used to interactively deliver HIV prevention program content. Instructional segments and skills demonstrations address topics covered in each intervention session. Girls are provided with opportunities to apply their learning through participation in games, interactive assessments, and such skills-building exercises as developing assertive responses for refusing requests to engage in risk-related sexual behaviors; identifying personal barriers to practicing abstinence and safer sex and developing strategies to overcome the barriers; placing cards listing the steps for using safer sex methods in the correct order; and developing, printing, and signing a behavioral contract indicating the commitment to practice abstinence or consistently use safer sex methods. Table 1 provides illustrative examples of interactive activities included in each of the six intervention sessions.

This study examined the efficacy of the Keepin' It Safe program. The aim was to determine whether urban early-adolescent girls who completed Keepin' It Safe, relative to wait-list control-group girls, would have greater HIV/AIDS knowledge, protective attitudes, and skills for reducing HIV risk-related sexual behaviors.

METHODS

DESIGN

The study was conducted in youth services agencies located in the greater New York City area, defined as the Bronx, Brooklyn, Manhattan, Queens, and Staten Island; the Long Island counties of Nassau and Suffolk; and eastern New Jersey (Jersey City, Elizabeth, and Newark east to the Hudson River). Youth services agencies were private nonprofit organizations that provided human services such as school dropout prevention, substance abuse prevention, recreation, educational tutoring, computer literacy training, and youth club activities. To ensure a homogenous sample, we screened agencies on four criteria. The agency had to serve a minimum of 20 adolescent females aged 11–14 years, have onsite computers with the minimum hardware specifications required to run Keepin' It Safe, comply with all research protocols, and agree to participate in the study for its duration.

The efficacy of Keepin' It Safe was evaluated in a randomized, pretest–posttest wait-list control-group design. Thirty-one youth services agency sites were randomized to computer intervention and wait-list control arms. Across sites, girls were administered pretests. Two weeks after pretesting, girls at computer intervention sites completed Keepin' It Safe in six onsite weekly sessions. Posttesting occurred 2 weeks after intervention or, for wait-list controls, 10 weeks after pretesting. Girls at wait-list control sites were offered the opportunity to complete Keepin' It Safe following the posttest.

SAMPLE

Selection criteria for study participation were that adolescents were female and between ages 11 and 14 years. Following institutional review board approval, written materials (i.e., a study description, listing of contact information for members of the investigative team, and consent form) were developed. Representatives at each site distributed the materials to eligible girls when they presented for services. Girls who returned the consent form with their signature and the signature of a parent or guardian were enrolled in the study. For their participation, girls received \$30.

On average, nine girls per site were enrolled in the study ($N = 272$). The response rate at posttest was 75% ($n = 204$). Common reasons for becoming lost to follow-up included sporadic attendance at community-based sites and discontinuation of involvement in after-school programming. Girls who did not return for the posttest were comparable to girls who completed the study on baseline measures of age, ethnic-racial affiliation, sexual behavior, and ARRM outcome variables. The analytic sample contained 111 and 93 intervention- and control-arm girls respectively. For a two-arm design, this sample size provided 80% power to detect a .20 between-arm difference in outcome variables studied ($1 - \alpha = .80$; two-tailed $\alpha = .05$; Biostat Inc., 1998).

MEASURES

Coded for confidentiality, girls completed an outcome battery at pretest and posttest measurement occasions. Demographic items assessed girls' age, ethnic-racial affiliation, household composition, primary language spoken, and comfort speaking and reading English. ARRM outcome variables were measured with various scales, detailed below, written at a fourth-grade reading level. All variables captured by the instrument were interval or ratio level except for categorical demographic data.

HIV/AIDS knowledge was measured via an 11-item scale of true-false questions. Content areas included HIV transmission, basic medical information about AIDS, and awareness of preventive behaviors ($\alpha = .64$) (Center for AIDS Prevention Studies, 2002). Correct answers were assigned a value of 1 and summed to derive a total score. Higher scores indicate greater HIV/AIDS knowledge.

Perceived vulnerability to HIV infection was assessed via a six-item scale that queried girls' perceptions of their risk of contracting HIV ($\alpha = .77$) (Sanderson & Cantor, 1995). Responses on 5-point Likert scales were averaged to derive a mean-item score. Higher scores indicate greater perceived vulnerability to HIV.

Perceived efficacy of low-risk activities was assessed via two scales. The first was a three-item scale that queried the belief that condoms can prevent pregnancy, STDs, and AIDS ($\alpha = .73$) (Koniak-Griffin, Lesser, Uman, & Nyamathi, 2003). The second was a two-item scale that assessed the belief that abstinence can prevent pregnancy, STDs, and AIDS ($\alpha = .84$). Responses on 5-point Likert scales in each measure were summed to derive a total score. Higher scores indicate the belief that condoms and abstinence can prevent pregnancy, STDs, and AIDS.

Perceived enjoyment of low-risk activities was assessed by two scales: A 5-item scale that measured beliefs regarding whether condoms interfere with sexual enjoyment ($\alpha = .74$) (Koniak-Griffin et al., 2003b), and a six-item scale that assessed beliefs regarding whether abstinence can be pleasurable ($\alpha = .68$). Responses on 5-point Likert scales in each measure were summed to derive a total score. Higher scores indicate the belief that condom use and abstinence can be pleasurable.

Self-efficacy for low-risk activities was measured via a five-item scale with 4-point Likert response options that assessed girls' confidence in their ability to avoid or remove themselves from high-risk situations and to request that a partner use a condom ($\alpha = .62$) (Center for AIDS Prevention Studies, 2002). Item ratings were summed to derive a total score. Higher scores indicate greater self-efficacy for low-risk activities.

Partner norms were measured via a three-item scale with 5-point Likert response options that queried girls' attitudes toward a partner who suggests using a condom ($\alpha = .69$) (Center for AIDS Prevention Studies, 2002). Responses to each item were summed to derive a total score. Higher scores indicate favorable attitudes toward a partner who suggests using a condom.

Sexual communication was measured using a three-item scale ($\alpha = .67$) with 3-point Likert response options that assessed sexual communication practices concerning safer sex and sexual histories relevant to HIV transmission (e.g., asking about the number of previous partners a potential sexual partner has had; discussing condom use before having intercourse) (Catania et al., 1989). Respondents rated the frequency of occurrence of each item (if sexually active) or the likelihood of using each strategy with a potential partner (if not sexually active). Item ratings were summed to derive a total score. Higher scores indicate more frequent sexual communication practices.

Sexual assertiveness was measured using a seven-item scale with 5-point Likert response options that assessed girls' ability to behave independently regarding their sexuality ($\alpha = .80$) (Snell, Fisher, & Miller, 1991). Item ratings were averaged to derive a mean-item score. Higher scores indicate greater sexual assertiveness.

Sexual behaviors were assessed via dichotomously coded items on dating, kissing, touching of breasts and genitals, and girls' lifetime experience of intercourse (Center for AIDS Prevention Studies, 2002). Sexually initiated girls were asked about their age at first intercourse, condom use at last intercourse, number of lifetime and current sexual partners, and frequency of intercourse and condom use over the past 2 months.

PROCEDURE

Blind to study condition, trained graduate research assistants (RAs) convened assessment and intervention sessions. During the recruitment stage of the study, girls were provided with dates and times for completing scheduled activities. As girls arrived for their scheduled assessment sessions, the RAs introduced themselves, and one of them read an introductory statement to the group, expressing appreciation for girls' participation, describing steps for completing the battery, and emphasizing that it was not a test. For each section of the measure, specific instructions for marking answers were given. As girls completed the battery, the RAs remained present to provide assistance. The RAs reviewed completed measures and followed up with girls who skipped or incorrectly coded questionnaire items.

In an approach similar to that used for assessment sessions, pairs of RAs facilitated computer-mediated intervention delivery sessions. The RAs introduced themselves to girls as they arrived for their scheduled appointments. One of them read an introductory statement to the group expressing appreciation for girls' participation, describing steps for accessing and navigating through the program, and instructing girls to raise their hands if they required assistance. Although the RAs remained present during the sessions, material guidance was neither offered nor solicited.

Each intervention session lasted approximately 30 minutes. Although girls could pause and restart sessions, the program did not allow girls to skim through or skip programmatic

segments. This approach ensured consistency in the duration and content of girls' program exposures.

Prior to their entry to the field, RAs were required to attend 4 hours of training. Separate trainings were held with RAs who were responsible for convening assessment sessions and with RAs who were responsible for supervising interactive software delivery sessions. The trainings addressed Ras' ethical responsibilities and adherence to human subjects protocols, demonstrated the procedures for administering outcome batteries and supervising interactive software delivery sessions, and engaged RAs in behavioral rehearsals of skills for carrying out their respective tasks.

ANALYSIS

Descriptive statistics generated a profile of respondent demographic characteristics and risk and prevention behaviors. Between-arm differences in baseline measures of demographic, sexual behavior, and ARRM outcome variables were assessed using two-tailed *t* tests for independent samples for continuous variables and χ^2 tests for categorical data. The effects of software intervention on girls' HIV/AIDS knowledge, perceived vulnerability to HIV, perceived efficacy and enjoyment of condoms, perceived efficacy and enjoyment of abstinence, self-efficacy for low-risk activities, partner norms, sexual communication, and sexual assertiveness were examined with linear regression models. The models were controlled for baseline values of each outcome.

RESULTS

The sample of 204 girls was 54% non-Hispanic Black, 29% Hispanic, 4% non-Hispanic White or other, and 13% not reported, with a mean age of 12.4 years ($SD = 1.2$). Nearly one half (46%) of girls lived in single-parent, female-headed households. English was the primary language spoken in a majority of girls' households (81%), with most girls (96%) reporting that they were comfortable speaking and reading English. Over four fifths (86%) of girls came from communities in which 20% or more of families had incomes below the federal poverty level (U.S. Census Bureau, 2006).

Examination of girls' lifetime and current sexual behaviors revealed that although girls were beginning to experiment sexually (i.e., 63% reported kissing a boy on the lips; 46% reported tongue kissing; 28% reported having their breasts touched, 19% reported touching a boy's penis), the percentages of girls engaging oral, anal, and vaginal intercourse were small (i.e., 4%, 1%, and 5%, respectively). Girls' mean age at first intercourse was 12.7 years ($SD = 1.4$); nearly one third (27%) of sexually initiated girls had two or more lifetime partners, and 18% reported that they had not consistently used condoms when having intercourse. A majority (64%) had engaged in intercourse over the past two months, with 18% having done so with 2 or more partners.

Bivariate analyses confirmed between-arm equivalence on measured baseline variables (Table 2). After adjustment by covariates, HIV/AIDS knowledge, perceived vulnerability to HIV, perceived efficacy and enjoyment of condoms, perceived efficacy and enjoyment of abstinence, and sexual assertiveness varied significantly with study arm (Table 3). Group means revealed that girls at computer intervention sites had higher posttest scores than wait-list controls on all but one variable (perceived vulnerability to HIV). To facilitate comparisons with effect size estimates reported in prior adolescent HIV prevention trials, effect sizes were calculated for outcomes that changed following intervention (Jemmott & Jemmott, 2000; Johnson, Carey, Marsh, Levin, & Scott-Sheldon, 2003). Effect size estimates were calculated using Cohen's formula for standardized differences (*d*) (Cohen, 1988). Posttest means adjusted for baseline

values of each outcome were used in effect size calculations. Observed effects (shown in Table 3) were moderate to large by Cohen's conventions.

CONCLUSIONS

The Keepin' It Safe program increased HIV/AIDS knowledge among this sample of urban, early adolescent girls. This finding is consistent with other ARRM-intervention outcome research among adolescents (Schlapman & Cass, 2000). Moreover, analyses revealed positive program effects on girls' perceived efficacy and enjoyment of abstinence, efficacy and enjoyment of condoms, and sexual assertiveness. Observed effects exceeded reported effects found in other adolescent HIV prevention trials (Jemmott & Jemmott, 2000; Johnson et al., 2003). These findings support the utility of the ARRM for guiding the development of the Keepin' It Safe program.

Examination of sexual behavior data revealed that girls were sexually inexperienced. This finding may account for the absence of intervention effects on measures of partner norms, self-efficacy for low-risk activities, and sexual communication, and the finding that intervention-arm girls' perceived vulnerability to HIV decreased from pretest to posttest. Girls who have not yet engaged in intercourse may not yet benefit from intervention to modify normative attitudes and skills that are essential for negotiating HIV risk-related sexual situations. Sexually inexperienced girls may also be less likely to perceive themselves as at risk for HIV because they have not engaged in intercourse, but may endorse common myths regarding nonsexual routes of HIV transmission. Possibly, girls' perceived vulnerability to infection decreased following intervention because they were more knowledgeable of the processes involved in the acquisition and transmission of HIV and therefore better able to assess their actual risk.

Prior gender-specific HIV prevention outcome studies have engaged older samples of sexually active girls (DiClemente et al., 2004; Koniak-Griffin et al., 2003a; Morrison-Beedy et al., 2004; Shrier et al., 2001). Programs designed to address mediators of HIV risk have similarly produced positive outcome changes in girls' HIV/AIDS knowledge and attitudes toward using condoms (DiClemente et al., 2004; Morrison-Beedy et al., 2004). Keepin' It Safe focuses on young girls who can benefit from knowledge, protective attitudes, and skills for reducing HIV risk-related sexual behaviors. As they mature and begin to experiment sexually, girls can apply these assets to HIV risk-related situations. As shown in this study, a theory based, gender-specific HIV prevention program can positively influence these outcomes among urban early-adolescent girls at risk for HIV infection.

Interactive approaches to gender-specific HIV prevention programming for adolescent girls are less common than traditional leader-delivered approaches (Downs et al., 2004; Scholes et al., 2003). In the Scholes et al. study, prevention program content was delivered via a computer-generated, tailored self-help magazine and booster letter. Downs et al. used a stand-alone interactive video to present HIV prevention materials. A novel feature of Keepin' It Safe is its use of CD-ROM technology to interactively deliver HIV prevention program content. A similarity with the aforementioned programs is the use of a portable and cost effective delivery modality. An advantage of Keepin' It Safe is the greater degree of active user involvement it requires.

The self-selected sample limits the generalizability of study findings. Girls who participated may have differed from poor, urban, minority girls in New York City and other U.S. metropolitan areas. The use of self-report measures introduces the potential for reporting bias. To minimize this potential, we used standardized instruments administered through established protocols. Within-site nonindependence, quantified by the intraclass correlation coefficient,

may have biased estimates of intervention effects. Yet such biases are unlikely for several reasons. Girls were involved in programs offered at participating sites on a limited basis. Girls were engaged in multiple activities that did not afford them regular and ongoing contact with other girls. Social contagion and peer socialization processes that engender shared interests and beliefs were less likely to operate under these conditions. Although multiple girls completed intervention sessions concurrently, our intervention program was not delivered in a group format. Seated at computers and outfitted with headsets, girls interacted with the program independently.

Study findings add to the limited data on theory based, gender-specific, HIV prevention programs for urban early-adolescent girls and on programs that utilize interactive technologies for HIV prevention program delivery. Young girls compose an increasingly large proportion of those infected with HIV, and few prevention programs have been expressly designed for and tested with urban, early adolescent girls at risk for HIV infection. Theory based, gender-specific HIV prevention programs are an essential component of the widespread effort to curtail the disproportionate impact of the HIV/AIDS epidemic on this population.

Acknowledgments

This study was sponsored by a research grant from the National Institute of Mental Health (MH 64251).

References

- Biostat Inc. Power and Precision [Computer software]. Englewood, NJ: Author; 1998.
- Catania JA, Dolcini M, Coates TJ, Kegeles SM, Greenblatt RM, Puckett S. Predictors of condom use and multiple-partnered sex among sexually active adolescent women: Implications for AIDS-related health interventions. *Journal of Sex Research* 1989;26:514–524.
- Catania JA, Kegeles SM, Coates TJ. Towards an understanding of risk behavior: The AIDS Risk Reduction Model (ARRM). *Health Education Quarterly* 1990;17:53–72. [PubMed: 2318652]
- Center for AIDS Prevention Studies. CAPS instruments. 2002. Retrieved March 19, 2002, from www.caps.ucsf.edu/capsweb/projects/hotinst.html
- Centers for Disease Control and Prevention. Heterosexual transmission of HIV – 29 states, 1999–2002. *Morbidity and Mortality Weekly Report* 2004;53:125–129.
- Centers for Disease Control and Prevention. HIV/AIDS among women. 2006. Retrieved July 19, 2006, from <http://www.cdc.gov/hiv/topics/women/resources/factsheets/pdf/women.pdf>
- Cohen, J. *Statistical power analysis for the behavioral sciences*. Vol. 2. Hillsdale, NJ: Erlbaum; 1988.
- DiClemente RJ, Wingood GM, Harrington KF, Lang DL, Davies SL, Hook EH, et al. Efficacy of an HIV prevention intervention for African American adolescent girls. *Journal of the American Medical Association* 2004;292:171–179. [PubMed: 15249566]
- Downs JS, Murray PJ, Bruine de Bruin W, Penrose J, Palmgren C, Fischhoff B. Interactive video behavioral intervention to reduce adolescent females' STD risk: A randomized controlled trial. *Social Science and Medicine* 2004;59:1561–1572. [PubMed: 15279915]
- Jemmott JB, Jemmott LS. HIV risk reduction behavioral interventions with heterosexual adolescents. *AIDS* 2000;14(Suppl 2):S40–S52. [PubMed: 11061641]
- Johnson BT, Carey MP, Marsh KL, Levin KD, Scott-Sheldon LA. Interventions to reduce sexual risk for the human immunodeficiency virus, 1985–2000: A research synthesis. *Archives of Pediatrics and Adolescent Medicine* 2003;157:381–388. [PubMed: 12695235]
- Koniak-Griffin D, Lesser J, Nyamathi A, Uman G, Stein JA, Cumberland WG. Project CHARM: An HIV prevention program for adolescent mothers. *Family and Community Health* 2003a;26:94–107.
- Koniak-Griffin D, Lesser J, Uman G, Nyamathi A. Teen pregnancy, motherhood, and unprotected sexual activity. *Research in Nursing and Health* 2003b;26:4–19.

- Morrison–Beedy D, Carey MP, Kowalski J, Tu X. Group–based HIV risk reduction intervention for adolescent girls: Evidence of feasibility and efficacy. *Research in Nursing and Health* 2004;28:3–15.
- Sanderson CA, Cantor N. Social dating goals in late adolescence: Implications for safer sexual activity. *Journal of Personality and Social Psychology* 1995;68:1121–1134. [PubMed: 7608858]
- Schlapman N, Cass PS. Project: HIV prevention for incarcerated youth in Indiana. *Journal of Community Health Nursing* 2000;17:151–158. [PubMed: 10985009]
- Scholes D, McBride CM, Grothaus L, Civic D, Ichikawa LE, Fish LJ, et al. A tailored minimal self–help intervention to promote condom use in young women: Results from a randomized trial. *AIDS* 2003;17:1547–1556. [PubMed: 12824793]
- Shrier LA, Ancheta R, Goodman E, Chiou VM, Lyden MR, Emans SJ. Randomized controlled trial of a safer sex intervention for high–risk adolescent girls. *Archives of Pediatrics and Adolescent Medicine* 2001;155:73–79. [PubMed: 11177066]
- Snell WE, Fisher TD, Miller RS. Development of the sexual awareness questionnaire: Components, reliability, and validity. *Annals of Sex Research* 1991;4:65–92.
- U.S. Census Bureau. American fact finder [Database]. 2006. Retrieved June 21, 2006 from Census Bureau Web site, <http://factfinder.census.gov>

TABLE 1
Outline of the Keepin' It Safe HIV Prevention Program

Activity	Topics Covered
Session 1: Understanding HIV/AIDS	
Multimedia presentation	Basic biological information about HIV/AIDS; abstinence and safer sex HIV risk reduction strategies
True/false questions	Facts and myths about HIV and AIDS
Session 2: Perceived vulnerability to HIV infection	
Video testimonial	Living with HIV; misconceptions regarding personal susceptibility to HIV infection
Self-risk assessment	Determining one's perceived and actual HIV infection risk
Session 3: Sexual decision making	
Sexual decision-making discussion	Circumstances or events that might lead to high-risk situations; strategies for avoiding high-risk situations; actions and events that might follow alternatives considered
Vignette	Weighing the costs and benefits of choosing abstinence
Session 4: Self-efficacy	
Positive self-talk discussion	Believing in one's ability to engage in self-protective behaviors
Positive self-talk exercise	Rephrasing personally relevant negative self-statements in positive terms
Session 5: Sexual communication and assertiveness	
Sexual communication discussion	Assertive, aggressive, and passive communication styles; 4-step model of assertive responding
Sexual communication exercise	Applying the 4-step model of assertive responding in HIV risk-related situations
Session 6: Risk reduction skills building	
Safer sex methods demonstrations	Male and female condoms and dental dams; steps for correctly using each method
Safer sex methods exercise	Rehearsing the steps for correctly using male and female condoms and dental dams

TABLE 2
Baseline Characteristics of Study Participants, by Arm

Characteristic	Control (n = 93)	Intervention (n = 111)	Statistical Test Results	p
Demographic data				
Age, mean (SD)	12.45(1.21)	12.42(1.11)	$t_{202} = .17$	ns
Ethnic-racial affiliation (%)			$\chi^2_3 = 7.26$	ns
Hispanic	30	28		
Non-Hispanic Black	51	57		
Non-Hispanic White or other	1	6		
Not reported	18	9		
Sexual behavior data ^a				
Sexually initiated (%)	7	5	$\chi^2_1 = .38$	ns
Age of initiation, mean (SD)	12.17(1.60)	13.40(.55)	$t_{11} = -1.63$	ns
Number of lifetime partners (%)			$\chi^2_1 = .75$	ns
1 person	83	60		
2–3 people	17	40		
Frequency of intercourse (%)			$\chi^2_2 = 3.44$	ns
Once a month	83	60		
2–4 times a month	—	40		
3 or more times a week	17	—		
Frequency of condom use (%)			$\chi^2_1 = .02$	ns
Always	83	80		
More than half of the time	17	20		
Condom use last intercourse (%) ^a	83	100	$\chi^2_1 = .92$	ns
Number partners (%) ^b			$\chi^2_2 = .11$	ns
None	33	40		
1 person	50	40		
2–3 people	17	20		
Frequency of intercourse % ^b			$\chi^2_2 = .24$	ns
Have not had sex	34	40		
1 time	33	40		
2 times	33	20		
Frequency of condom use (%) ^b			$\chi^2_3 = 2.26$	ns
Have not had sex	33	20		
Always	50	60		
More than half of the time	17	—		
Never	—	20		
ARRM outcomes (Mean (SD))				
HIV/AIDS knowledge	7.31 (2.17)	6.69(2.70)	$t_{202} = 1.81$	ns
Perceived vulnerability to HIV	2.76(.69)	2.61(.73)	$t_{202} = 1.52$	ns
Efficacy of condoms	10.48(2.56)	10.43(2.72)	$t_{202} = -.14$	ns
Enjoyment of condoms	16.65(2.40)	16.79(2.69)	$t_{202} = -.41$	ns

Characteristic	Control (<i>n</i> = 93)	Intervention (<i>n</i> = 111)	Statistical Test Results	<i>p</i>
Efficacy of abstinence	7.47(1.86)	6.96(2.12)	$t_{202} = 1.81$	<i>ns</i>
Enjoyment of abstinence	20.00(3.03)	19.43(3.69)	$t_{202} = 1.19$	<i>ns</i>
Partner norms	7.65(1.82)		7.59(2.08)	
Self-efficacy for low-risk activities	12.13(3.36)	12.42(3.02)	$t_{202} = -.66$	<i>ns</i>
Sexual communication	5.21(2.51)	5.33(2.45)	$t_{202} = -.37$	<i>ns</i>
Sexual assertiveness	1.90(.74)	1.72(.64)	$t_{202} = 1.85$	<i>ns</i>

Note. NS = not statistically significant (i.e., $p > .05$).

^a Analyses based on data provided by sexually initiated girls ($n = 11$).

^b Behavior measured over the past two months.

TABLE 3

Regression Analysis of Posttest Between-Arm Differences in Study Outcomes

Outcome	Unstandardized Coefficient (95% CI)	P	d
HIV/AIDS knowledge	1.76(1.20, 2.32)	.000***	-.84
Perceived vulnerability to HIV	-.28 (-.46, -.10)	.003**	-.21
Efficacy of condoms	1.09 (.38, 1.79)	.003**	-.36
Enjoyment of condoms	.87 (.02, 1.72)	.045*	-.23
Efficacy of abstinence	.80 (.28, 1.31)	.003**	-.51
Enjoyment of abstinence	3.25 (2.22, 4.27)	.000***	-.86
Partner norms	.30 (-.27, .87)	<i>ns</i>	—
Self-efficacy for low-risk activities	.47 (-.26, 1.19)	<i>ns</i>	—
Sexual communication	.13 (-.53, .80)	<i>ns</i>	—
Sexual assertiveness	.38 (.17, .59)	.000***	-.57

Note. CI = Confidence interval; *d* = effect size, calculated as the standardized difference between computer intervention and wait-list control group posttest means adjusted for baseline values of each outcome; NS = not statistically significant (i.e., $p > .05$). Analyses were controlled for pretest scores on each outcome.

* $p < .05$,

** $p < .01$,

*** $p < .001$.