Published in final edited form as:

J Eval Clin Pract. 2013 April ; 19(2): 408–413. doi:10.1111/j.1365-2753.2012.01841.x.

Effectiveness of a Brief Condom Promotion Program in Reducing Risky Sexual Behaviors among African American Males

Stephen B. Kennedy, MD, MPH¹, Sherry Nolen, AA², Zhenfeng Pan, PhD¹, Betty Smith², Jeffrey Applewhite², and Kenneth J. Vanderhoff, MA¹

¹Pacific Institute for Research & Evaluation (PIRE), Louisville Center, 1300 South Fourth Street, Suite 300, Louisville, KY 40208, USA

²South Side Help Center (SSHC), 10420 South Halsted Street, Chicago, IL 60628, USA

Keywords

Condom Promotion Program; African American Males; Minority Health; Intervention Research; HIV/STDs; Condom Use Behavior

INTRODUCTION

HIV/STDs remain a significant public health problem for youths in the U.S., especially African Americans.^{1–2} Despite the effects of risky sexual behaviors on their quality of life, the ability for young adults across all racial/ethnic groups to use condoms as an effective HIV/STD-related prevention strategy remains a formidable public health challenge.^{3–4}

The relationship between HIV/STDs and the lack of condom use has been documented.^{4–5} For example, findings from self-reported data on prior 3-month condom use behaviors obtained from 806 males aged 18 years (26% African Americans, 31% Hispanics, 18% Asians, 25% Caucasians) revealed that condom use was lowest among African Americans and Hispanics and lowest for heterosexuals. During sexual encounters, interestingly, African American and Hispanic males were significantly more likely to report experiencing difficulties with using condoms.⁶ These findings strongly suggest that racial/ethnic targeting for condom promotion programming may be efficacious in increasing condom use among high risk urban minority males.

STUDY METHODS

Eligibility Criteria

The study design and research methods have been extensively described elsewhere.^{7–8} Briefly, we describe those procedures.

African American males 18–24 years old were recruited from neighborhoods bordering one of four community centers on Chicago's South Side who engage in risky sexual behaviors (e.g., self-report of unprotected sex, inconsistent condom use) during the prior 3–6 months.^{7–8}

CORRESPONDING AUTHOR: Stephen B. Kennedy, MD, MPH, Pacific Institute for Research & Evaluation (PIRE), Louisville Center, 1300 South Fourth Street, Suite 300, Louisville, KY 40208, USA, Tel: 502 634 3694 ext. 7332, Fax: 502 634 5690, kennedy@pire.org.

Enrollment Procedures

Eligible participants were targeted from hang out spots (e.g., street corners, recreational centers) during recruitment visits and engaged one-on-one by experienced recruiters of similar race/ethnicity.^{7–8} The institutional review board (IRB) of Pacific Institute for Research & Evaluation (PIRE) approved the study and signed written informed consents provided. Lastly, each participant was provided \$15 for completing the baseline survey and program, \$10 for transportation reimbursement (total: \$25), and condoms.⁷

Intervention Development

The intervention was derived from an effective 12-module HIV/STDs and substance abuse prevention curriculum.^{9–10} The curriculum was provided to key informants to elicit inputs on relevant programmatic changes and four focus groups conducted to elicit additional inputs regarding the unique needs of this population.⁸

The goal of the 45–60 minute, single session, gender-based condom promotion program was to introduce participants to condoms (e.g., barriers, facilitators) and increase their knowledge and skills to use condoms. Information was presented in engaging formats and skills reinforced to offer participants with multiple opportunities to practice condom applications.

The study was guided by the integration of two commonly employed behavioral theories in intervention research: Bandura's social cognitive theory (SCT)¹¹ and Prochaska and colleagues' trans-theoretical model (TTM).¹² As an integrated framework, when effectively applied to sexual behaviors, they hypothesize that behaviors can be affected by understanding what must be done to avoid HIV/STDs, a belief in the anticipated benefit of avoiding risky behaviors, and a belief that such skills can be effectively used to prevent HIV/STDs.^{11–12}

Attention-Matched Comparison Condition

The attention-matched comparison condition was also a 45–60 minute, single session, general health promotion curriculum with three subsections: (1) HIV/STD-related knowledge; (2) criminal justice system since incarceration is a significant issue facing this population; and (3) promotion of job skills. Unlike the intervention, it lacks the study's theoretical frameworks.

Program Administration

We provided four hours of training in program administration procedures to two experienced HIV prevention specialists to deliver the programs. Each facilitator was randomly assigned half of enrolled participants from each program condition and study venue. This strategy was employed to minimize clinic-related factors (e.g., services, scheduling) and the influence of facilitators and venue-related factors on program effects.

The programs were administered during interactive single sessions by fostering dialogues between facilitators and participants in secured rooms at those community centers. Moreover, a quarter of the sessions were randomly selected to monitor program implementation fidelity.

Study Participants

Of 364 males approached for recruitment, 37% (136) completed the baseline survey and randomized to program conditions. The remaining 63% (228) were either ineligible,

unwilling to commit to study expectations, and/or refused to participate. No study-related data were obtained from non-participants.

Study Measures

The primary outcome measures were frequencies of condom use and unprotected sex. The 30–60 minute survey was administered at baseline, and 3- and 6-months follow-up to assess program effects. The development of the 33-items self-administered pencil and paper questionnaire, including its psychometric properties and sources, have been extensively described elsewhere.⁷

Data Collection Procedures

Two experienced African American HIV/STD prevention specialists were trained in data collection procedures as primary data collectors. The survey was coded with unique identifiers and administered one-on-one by data collectors based on scheduling at community venues.

Data Analyses

After validity checks⁷, differences in mean scores for key outcome measures and relevant scales for intervention vs. comparison groups were statistically analyzed and presented in Table 1A. In Table 1B, change scores between program groups were examined using ANOVA to assess if post-administration differences were statistically significant. Finally, in Table 2, generalized HLM modeling technique was used to explore the predictors of change among the primary outcome measures and relevant secondary moderating variables.

RESULTS

Study Sample

One hundred thirty-six (136) African American males aged 18–24 years completed the baseline survey and program administration (half intervention, half comparison programs); of which, 115 (85%) completed 3-month and 120 (88%) 6-month follow-up surveys. The study was based on the intent to treat. Detailed description of the demographic characteristics of this sample has been extensively described elsewhere.⁷

Table 1A shows that all key outcome variables and majority of condom use mediating scales had positive effects on participants randomized to the intervention vs. comparison groups from baseline to 3-month. Also, positive effects were observed from baseline to 6-month for intervention vs. comparison participants regarding prior condom use (1.23 to 1.82 vs. 1.34 to 0.97), condom use intention (2.51 to 3.19 vs. 2.69 to 2.21), perceived condom availability (3.44 to 3.72 vs. 3.42 to 3.38), positive reasons to use condom (2.82 to 3.08 vs. 2.95 to 1.99), favorable condom use attitude (2.41 to 2.69 vs. 2.49 to 1.95), barriers to use condom (1.33 to 0.79 vs. 1.25 to 1.85), perceived susceptibility to HIV/AIDS (2.63 to 2.60 vs. 2.68 to 2.36), and negative reasons to use condom (1.45 to 0.66 vs. 1.33 to 1.39).

Interestingly, positive effects were not sustained for condom use self-efficacy (2.97 to 2.67) and peer condom use support (2.23 to 2.03) from baseline to 6-month for intervention participants, except that condom self-efficacy had increased for comparison participants (3.09 to 3.39).

Table 1B shows that differences between the intervention and comparison groups were statistically significant without considering the effect of covariates. Also, differences in change scores from baseline to 6-month were statistically significant for all primary

outcome variables and majority of secondary condom moderating scales, except for two scales: perceived susceptibility to HIV/AIDS and positive reasons to use condoms.

The differences in change scores between intervention and comparison groups for intentions to use condoms ($p = 0.01$) and engage in unprotected sex ($p = 0.05$) were statistically significant from baseline to 3-month while those for the frequencies of prior condom use ($p = 0.10$) and unprotected sex ($p = 0.10$) were minimally significant. Also, the differences from baseline to 6-month were statistically significant for all outcome variables: prior frequency of condom use ($p = 0.05$), prior frequency of unprotected sex ($p = 0.05$), intention to use condom ($p = 0.01$) and intention regarding the frequency of unprotected sex ($p = 0.01$), respectively.

From baseline to 6-month, these scales were observed to be statistically significant for intervention vs. comparison participants: prior condom use ($p = 0.01$), condom use intention ($p = 0.01$), condom use self-efficacy ($p = 0.01$), condom use barrier ($p = 0.01$), negative reasons for condom use ($p = 0.01$) and favorable condom use attitude ($p = 0.01$), respectively. On the contrary, perceived condom availability ($p = 0.10$) was observed to be minimally significant while perceived susceptibility to HIV/AIDS, positive reasons to use condoms and peer support for condom use were not found to be significant.

For Table 2, ordinary least squares (for continuous outcomes) and logistic (for dichotomous outcomes) regressions were performed regressing outcomes on program conditions and baseline standing on the dependent measure in each analysis. The results suggest, for example, that intervention participants were 4.73 times more likely to use condoms during the prior 30-days at 3-month relative to comparison participants ($p < .05$, two-tailed) and greater (5.03) during the next 30 day ($p < .05$, two-tailed). Although intervention participants were 2.04 times more likely to use condoms at 6-month than comparison participants for prior 30 day condom use and slightly greater (2.07) during the next 30 days, these effects failed to reach a conventional level of significance, due to the small sample size ($p = .17$ & $p = .13$, two-tailed). The Wald chi-square values for these significance tests roughly correspond to a Cohen's d of .60 and .30. Similar findings were observed for prior 3- and next 3-month frequencies of condom use at post-tests for intervention vs. comparison participants, respectively.

Examining secondary (mediating) outcomes, intervention participants showed positive effects for prior condom use, greater intentions to use condoms, greater condom use efficacy, fewer perceived barriers to using condom, perceiving condoms as being more available, seeing more positive reasons for using condoms, seeing fewer negative reasons for using condoms, and having more favorable attitudes toward condom use at 3-month vs. comparison participants ($p < .05$, two-tailed). The only effects that persisted up to 6-month were that intervention participants had more intentions to use condoms in the future, experienced fewer barriers to using condoms, and fewer negative reasons for non-condom use vs. comparison participants ($p < .06$, two-tailed).

DISCUSSION

While theory-driven HIV/STD prevention programs have shown promise in reducing risky sexual behaviors and promoting condom use,¹³⁻¹⁷ those programs also vary greatly based on, for example: (1) delivery *content*: focus on sexual antecedents (e.g., HIV/STD programs) vs. non-sexual antecedents (e.g., service learning programs) or both¹³; (2) delivery *mechanism*: electronic/multi-media¹⁴ vs. print/curriculum¹⁵; (3) delivery duration: single brief session¹⁶ vs. multiple sessions¹⁵; (4) delivery venue: clinic¹⁶ vs. community settings¹⁵; (5) delivery format: one-on-one¹⁶ vs. small group¹⁵; (6) delivery group: same¹⁵

vs. mixed genders¹³; (7) delivery theory: client centered counseling¹⁶ vs. TTM¹⁷; (8) delivery strategy: peer¹⁸ vs. non-peer led¹⁶ programming; and (9) delivery effects on changes in condom use: ranging from relatively small to no change¹⁹ vs. moderate to large change,^{16,20} respectively. As a result, efforts to promote condom use remain a significant public health challenge for behavioral researchers.

To address programmatic challenges, we elicited significant inputs from key informants and members of the target population regarding program development and implementation. Also, we incorporated lessons learned from prior and existing evidence-based successful programs that promote condom use efficacy for high risk populations.^{13,16,18,20}

The practical implications for this project is that brief, one session, gender-based, interactive, theory-driven, culturally appropriate prevention programs can reduce risky sexual behaviors among high risk youth from urban communities.

Overall, for example, our findings revealed that the mean scores for key primary outcome variables and majority of secondary condom-related moderating scales changed in the desired/positive directions for intervention vs. comparison participants. Moreover, mean scores for primary outcome variables and majority of secondary moderating scales were statistically significant from baseline to 6-month, respectively.

From exploratory multivariate analyses using generalized HLM modeling technique for binary outcomes, the analyses showed that factors such as favorable attitude toward condom use, knowledge of someone with HIV/STDs, and condom availability had statistically significant positive impact on promoting condom use.

In conclusion, this 6-month follow-up behavioral-related findings clearly suggest that our brief one-session condom promotion program was effective in promoting condom use, reducing risky sexual behaviors, encouraging favorable attitudes toward condoms, supporting intentions to use condoms and minimizing intentions to engage in unprotected sex among high risk urban young adult African American males.

Lastly, there were few limitations to this pilot study. First, data collection was based on self-report. Second, the sample size was relatively small. Third, follow-up period was also relatively short to determine long term efficacy. However, such limitations are not uncommon in pilot studies. Importantly, our study designs and methods were scientifically rigorous; thereby, potentially validating our findings. Nevertheless, we believe that an efficacy study with larger sample size and greater power may be highly relevant to ascertain the intervention benefits of our brief one-session condom promotion program.

Acknowledgments

This study was funded by a developmental/exploratory grant (R21 HD048253) from the National Institute of Child Health and Human Development (NICHD) of the National Institutes of Health (NIH) in Bethesda, Maryland, USA.

REFERENCES

1. Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report. 2001a; 7(1)
2. Centers for Disease Control and Prevention. STDs in Racial & Ethnic Minorities. STD Surveillance 2001, Special Focus Profiles. 2001c
3. DiClemente RJ, Lodico M, Grinstead OA, Harper G, Rickman RL, Evans PE, Coates TJ. African-American adolescents residing in high-risk urban environments do use condoms: Correlates and predictors of condom use among adolescents in public housing developments. *Pediatrics*. 1996; 98:269–278. [PubMed: 8692629]

4. Marin BV, Marin G. Predictors of condom accessibility among Hispanics in San Francisco. *American Journal of Public Health*. 1992; 82:592–595. [PubMed: 1546783]
5. Noar SM, Cole C, Carlyle K. Condom use measurement in 56 studies of sexual risk behavior: review and recommendations. *Arch Sex Behav*. 2006; 35(3):327–345. [PubMed: 16799837]
6. Essien EJ, Meshack AF, Peters RJ, Ogungbade GO, Osemene NI. Strategies to prevent HIV transmission among heterosexual African-American men. *BMC Public Health*. 2005; 5(3)
7. Kennedy SB, Nolen S, Applewhite J, Pan Z, Shamblen S, Vanderhoff KJ. A Quantitative Study on Condom Behaviors of 18–24 Years African American Males. *AIDS Patient Care & STDs*. 2007; 21(5):306–320. [PubMed: 17518523]
8. Kennedy SB, Nolen S, Applewhite J, Waiters E, Vanderhoff KJ. Condom Use Behaviors of 18–24 Year-Old Urban African American Males: A Qualitative Study. *AIDS Care*. 2007; 19(8):1032–1038. [PubMed: 17852001]
9. Zimmerman, RS.; Feist-Price, S.; Atwood, K.; Cupp, PK.; Clay, C.; Dudley, M.; Abell, R. Paper presented at the 2003 National HIV Prevention Conference. Atlanta, Georgia: 2003. Alcohol use and HIV prevention with three high-risk groups of adolescents.
10. Atwood, KA.; Zimmerman, RS.; Clay, C.; Cupp, PK. Paper presented at the 2003 National HIV Prevention Conference. Atlanta, Georgia: 2003. Interactive HIV prevention tools for reaching high-risk adolescents.
11. Bandura, A. Social cognitive theory and exercise of control over HIV infection. In: DiClemente, RJ.; Peterson, J., editors. *Preventing AIDS*. New York: Plenum; 1994. p. 25-59.
12. Prochaska JO, DiClemente CC, Norcross JC. In search of how people change: Applications to addictive behaviors. *American Psychologist*. 1992; 47:1102–1114. [PubMed: 1329589]
13. Kirby, D. Emerging answers: Research findings on programs to reduce teen pregnancy. Washington, DC: The National Campaign to Prevent Teen Pregnancy; 2001.
14. Di Noia J, Schinke SP, Pena JB, Schwinn TM. Evaluation of a brief computer-mediated intervention to reduce risk among early adolescent females. *Journal of Adolescent Health*. 2004; 35(1):62–64. [PubMed: 15193576]
15. Jemmott JB III, Jemmott LS, Fong GT. Abstinence and safer sex HIV risk-reduction interventions for African American adolescents: A randomized controlled trial. *Journal of the American Medical Association*. 1998; 279:1529–1536. [PubMed: 9605896]
16. Kamb ML, Fishbein M, Douglas JM Jr, Rhodes F, Rogers J, Bolan G, Zenilman J, Hoxworth T, Malotte K, Latesta M, Kent C, Lentz A, Graziano S, Byers RH, Peterman TA. Efficacy of risk-reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases: A randomized controlled trial. *Journal of the American Medical Association*. 1998; 280:1161–1167. [PubMed: 9777816]
17. O'Campo P, Fogarty L, Gielen AC, Armstrong K, Bond L, Galavotti C, Green BM. Distribution along a stages-of-behavioral-change continuum for condom and contraceptive use among women accessed in different settings. *Prevention of HIV in Women and Infants Demonstration Project*. *Journal of Community Health*. 1999; 24(1):61–72. [PubMed: 10036648]
18. Fisher JD, Fisher WA, Bryan AD, Misovich SJ. Information-motivation-behavioral skills model-based HIV risk behavior change intervention for inner-city high school youth. *Health Psychol*. 2002; 21(2):177–186. [PubMed: 11950108]
19. O'Leary A, DiClemente RJ, Aral SO. Reflections on the design and reporting of STD/HIV behavioral intervention research. *AIDS Education and Prevention*. 1997; 9(Suppl. 1):1–14.
20. National Institute of Mental Health (NIMH) Multisite HIV Prevention Trial Group. The NIMH multisite HIV prevention trial: Reducing HIV sexual risk behavior. *Science*. 1998; 280:1889–1894. [PubMed: 9632382]

Table 1

A shows the Mean Scores for Outcome Variables & Condom Moderating Scales between Intervention & Comparison Groups

Measures	Intervention Condition				Comparison Condition			
	Baseline	3-Month Follow Up	6-Month Follow Up	Baseline	3-Month Follow Up	6-Month Follow Up	Baseline	3-Month Follow Up
Outcome Measures								
Prior 3-Month Frequency of Condom Use	2.27	2.46	2.68	2.33	2.36	1.74		
Prior 3-Month Frequency of Unprotected Sex	1.50	1.22	0.94	1.61	1.14	1.83		
Next 3-Month Intention for Condom Use	2.75	3.00	3.17	3.05	2.75	2.09		
Next 3-Month Intention for Unprotected Sex	1.12	0.80	0.71	0.96	1.09	1.74		
Condom Moderating Scales								
Prior Condom Use Scale	1.23	1.05	1.82	1.34	1.05	0.97		
Condom Use Intention Scale	2.51	2.92	3.19	2.69	2.49	2.21		
Condom Use Self-Efficacy Scale	2.97	3.11	2.67	3.09	3.23	3.39		
Condom Use Barrier Scale	1.33	1.06	0.79	1.25	1.35	1.85		
Perceived Condom Availability	3.44	3.99	3.72	3.42	3.56	3.38		
Perceived Susceptibility to HIV/AIDS	2.63	2.75	2.60	2.68	2.70	2.36		
Positive Reasons for Condom Use	2.82	3.00	3.08	2.95	2.69	1.99		
Negative Reasons for Condom Use	1.45	0.95	0.66	1.33	1.33	1.39		
Favorable Condom Use Attitude Scale	2.41	2.36	2.69	2.49	2.36	1.95		
Peer Condom Use Support Scale	2.23	2.03	2.08	2.33	2.27	1.99		
N Ranges	37–51	37–51	40–60	34–44	34–43	39–54		

B. Mean Differences in Change Scores between Intervention and Comparison Groups for Key Condom-Related Variables

Measures	Baseline to 3-Month Change			3-Month to 6-Month Change			Baseline to 6-Month Change		
	Difference between Intervention & Comparison Groups	Sig	Difference between Intervention & Comparison Groups	Difference between Intervention & Comparison Groups	Sig	Difference between Intervention & Comparison Groups	Difference between Intervention & Comparison Groups	Sig	Difference between Intervention & Comparison Groups
Outcome Measures									
Prior 3-Month Frequency of Condom Use	0.04		0.05		*	–0.08		**	

B. Mean Differences in Change Scores between Intervention and Comparison Groups for Key Condom-Related Variables

Measures	Baseline to 3-Month Change	3-Month to 6-Month Change	Baseline to 6-Month Change
Prior 3-Month Frequency of Unprotected Sex	-0.27	0.08	-0.14
Next 3-Month Intention for Condom Use	-0.14	-0.03	-0.25
Next 3-Month Intention for Unprotected Sex	0.02	0.11	0.18
Condom Moderating Scales			
Prior Condom Use Scale	-0.13	0.42	0.08
Condom Use Intension Scale	0.01	0.18	0.13
Condom Use Self-Efficacy Scale	0.10	-0.16	-0.01
Condom Use Barrier Scale	-0.05	-0.04	0.02
Perceived Condom Availability	0.31	-0.19	0.12
Perceived Susceptibility to HIV/AIDS	0.04	-0.19	-0.17
Positive Reasons for Condom Use	0.00	-0.13	-0.36
Negative Reasons for Condom Use	-0.19	-0.20	-0.33
Favorable Condom Use Attitude Scale	-0.10	0.15	-0.13
Peer Condom Use Support Scale	-0.11	-0.05	-0.24
N Ranges	87-115	71-94	79-114

Note: the differences in change scores between different time points are calculated by subtracting the early time values from the subsequent time values of each outcome measure.

Note: the differences in change scores between intervention and comparison groups are calculated by subtracting the change score of the comparison group from that of the intervention group.

The statistical significance is the ANOVA F-test significance level for the difference in change scores between intervention and comparison groups. Significant differences imply impact by the intervention.

p 0.01,

**
p 0.05,

*
p 0.10.

Table 2
Differences between Intervention and Comparison Groups for Key Condom-Related Variables by Regression Analyses

Measures	Baseline to 3-Month Post-Test [*]					Baseline to 6-Month Follow-Up [*]				
	B	SE	t/Wald	P	β/OR	B	SE	t/Wald	P	β/OR
Outcome Measures										
Prior 30-Day Frequency of Condom Use	1.55	.58	7.26	.01	4.73	.71	.52	1.90	.17	2.04
Next 30-Day Frequency of Condom Use	1.62	.54	8.82	.00	5.03	.73	.48	2.27	.13	2.07
Prior 3-Month Frequency of Condom Use	1.05	.28	3.74	.00	.32	.17	.27	.62	.54	.05
Next 3-Month Frequency of Condom Use	1.16	.28	4.15	.00	.36	.43	.25	1.74	.08	.16
Condom Moderating Scales										
Prior Condom Use Scale	.83	.21	3.97	.00	.35	-.11	.18	-.62	.54	-.06
Condom Use intention Scale	1.03	.23	4.53	.00	.39	.46	.20	2.28	.02	.20
Condom Use Self-Efficacy Scale	-.70	.18	-3.83	.00	-.34	-.05	.14	-.31	.75	-.03
Condom Use Barrier Scale	-1.09	.18	-6.11	.00	-.50	-.30	.15	-1.94	.05	-.18
Perceived Condom Availability	.33	.13	2.53	.01	.23	.42	.26	1.64	.10	.15
Perceived Susceptibility to HIV/AIDS	.22	.23	.98	.33	.09	.10	.22	.44	.66	.04
Positive Reasons for Condom Use	1.13	.22	5.25	.00	.45	.33	.19	1.70	.09	.16
Negative Reasons for Condom Use	-.74	.20	-3.72	.00	-.34	-.39	.20	-2.00	.05	-.19
Favorable Condom Use Attitude Scale	.75	.16	4.61	.00	.40	-.03	.15	-.21	.83	-.02
Peer Condom Use Support Scale	.10	.09	1.06	.29	.10	-.19	.10	-1.86	.07	-.16

* B = Slope for regression line. SE = Standard error. t = t-statistic for OLS regressions. Wald = Wald test for logistic regressions. p = p-value for statistical significance test (p 0.01, ** p 0.05, * p 0.10). β = The standardized slope values for OLS regression. This is interpreted like a correlation coefficient between time point and outcome standing. OR = Odds Ratio.