

REAL Men: A Group-Randomized Trial of an HIV Prevention Intervention for Adolescent Boys

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Sexually active adolescents, particularly those who fail to use condoms every time they have sexual intercourse, are placing themselves at risk for contracting HIV and other sexually transmitted infections (STIs). The sex educational needs of middle and high school students have been recognized for many years, resulting in a number of excellent programs designed specifically for this age group.¹⁻⁴ One gap in HIV prevention, however, has been the lack of involvement of parents in adolescent programs. Parents are often not aware of the information that is presented to their children and thus fail to reinforce important messages about HIV, STIs, and pregnancy prevention. More important, perhaps, is that parents are not adequately encouraged to talk with their children about sexual health.

Several programs for parents and adolescents, particularly mothers and adolescent daughters, have been developed and tested.⁵⁻⁸ The evaluation of these programs has shown some promising results, including the increased involvement of parents in the sex education of their adolescents.^{7,9-12} However, effects on key behavioral indices such as initiation of sexual intercourse and the use of birth control or condoms have been less impressive.¹⁰⁻¹²

Although identified as important, sex education designed specifically for adolescent boys has been lacking. Relatively few programs for adolescent boys are available, and of these, few have been evaluated. We report the results of an HIV prevention program designed to encourage communication between fathers (or father figures) and sons about HIV prevention behaviors. The primary aim of the study, called REAL Men (REAL=Responsible, Empowered, Aware, Living), was to test the efficacy of an intervention to promote the delay of sexual intercourse among 11- through 14-year-old adolescent boys as well as to encourage condom use among sexually active adolescents and improve communication about sexuality between fathers and sons.

Objectives. We tested the efficacy of an intervention among 11- to 14-year-old adolescent boys to promote delay of sexual intercourse, condom use among those who were sexually active, and communication on sexuality between fathers (or father figures) and sons.

Methods. Sites were randomly assigned to the intervention and control groups. Assessments were conducted prior to the intervention and at 3-, 6-, and 12-month follow-up interviews.

Results. A total of 277 fathers and their sons completed baseline assessments. Most participants were African American, and most fathers lived with their sons. Significantly higher rates of sexual abstinence and condom use and of intent to delay initiation of sexual intercourse were observed among adolescent boys whose fathers participated in the intervention. Fathers in the intervention group reported significantly more discussions about sexuality and greater intentions to discuss sexuality than did control-group fathers.

Conclusions. The study demonstrates that fathers can serve as an important educator on HIV prevention and sexuality for their sons. (*Am J Public Health*. 2007;97:1084-1089. doi:10.2105/AJPH.2005.073411)

METHODS

Procedures

This study was conducted in collaboration with the Boys & Girls Clubs of Metro Atlanta, a community-based organization that provides after-school and summer programs primarily for disadvantaged children in the Atlanta metropolitan area. Seven sites were selected for participation in the research project. The sites were randomly assigned, with 4 sites assigned to the intervention group and 3 to the control group. The 2 smallest sites, serving similar neighborhoods and located within a 15-minute drive from each other, were combined and randomized as a unit.

Recruitment

The population was composed of 11- through 14-year-old adolescent boys who were enrolled as members at the Boys & Girls Clubs and their fathers. To participate, adolescents were required to be aged 11 to 14 at the time of the baseline interview. Because some adolescents might not have regular contact with their fathers, nonbiological father figures were invited to participate.

Father figures (hereafter referred to as fathers) were eligible if they were aged 18 years or older, were identified by the mother as a significant influence in the adolescent's life, and had at least a 1-year relationship with the adolescent, and the mother and son both agreed that the person chosen would serve as a father figure. Fathers and adolescent participants began the study by completing a baseline questionnaire using an audio computer-assisted format. Fathers were asked to attend 7 program sessions, and sons were asked to attend the final session with their fathers. Both fathers and sons completed 3 follow-up interviews (at 3, 6, and 12 months after the baseline interview). Informed consent was obtained from the legal guardian (legal father or mother) for the son's participation in the study and from the father for his own participation. Adolescents provided assent to participate in the study.

Intervention Group

The REAL Men program was based on social cognitive theory, which proposes that the behaviors a person chooses to perform are because of complex interactions among

personal, environmental, and behavioral factors.¹³ Personal factors include self-efficacy, outcome expectations, and performance goals; environmental factors include encouragement and support from others. In the REAL Men program, fathers were presented with information on communication with adolescents, general topics such as parental monitoring and relationships with peers, general sexual topics important in adolescence, and specific information about transmission and prevention of HIV and AIDS. The program was structured to include opportunities to view others performing the behavior (i.e., videotapes of fathers talking to sons about sexual topics) and to practice the behavior through role plays. To encourage participation in the sessions, dinner was served and small nonmonetary incentives were given to both fathers and sons. All participants received \$25 for completing each of the 4 assessments (i.e., baseline questionnaire and 3 follow-up interviews).

The intervention, which consisted of seven 2-hour sessions for the fathers, was delivered once each week in a group format. Fathers attended the first 6 sessions alone, and fathers and sons attended the final session together. All sessions except the first began with a review of the previous session, a discussion of the take-home activities, and a review of personal goals set by study participants. Session content was delivered through a combination of lectures, discussions, role-plays, games, and videotapes. Participants were given a participant manual to assist with weekly take-home activities and adherence to personal goals set each week. The last session included a celebration of the end of the intervention in which fathers and sons received certificates of completion.

Control Group

The control group participated in a 7-session nutrition and exercise program. The program was held once a week for 2 hours. Fathers attended the first 6 sessions alone and with their sons in the last session. Content and discussion included basic facts about nutrition and exercise, the benefits of maintaining a healthy lifestyle and eating fruits and vegetables, estimation of serving size, how to read and interpret food labels, and the

benefits of and barriers to exercise. Session content was delivered through a combination of lectures, discussions, role playing, games, and videotapes.

Measures

The primary outcomes were adolescent sexual abstinence and communication about sex between fathers and sons. Several secondary outcomes were assessed—the adolescents' participation in intimate behaviors, their condom use, and the fathers' intention of communicating with their sons. Abstinence rates were computed from the response to a single item: "Have you ever had sexual intercourse (sex)?" Participants were classified as having had sexual intercourse if they responded yes to this item and as being sexually abstinent if they answered no. Eight items excluding sexual intercourse assessed intimate sexual behaviors. These items, which measured the progression of sexual behavior, each began with the stem, "Have you ever. . . ." The first item in the series was, "Have you ever spent time with a girl in a private place?" The number of "yes" responses was summed to yield an overall score that could range from 0 to 8, with higher scores corresponding to involvement in a greater variety of intimate sexual behaviors. The Cronbach α for the 8 items was 0.89.

Adolescents who reported never having had sexual intercourse were asked which of the following described their intentions regarding sex: not to have sex until married, not to have sex until older, or would probably have sex within the next year. For the analysis, the last 2 categories were combined. Adolescents who reported having had sex were asked about their condom use and their intentions regarding condom use. They were asked to respond yes or no to the following questions: "Have you ever had sex without a condom?" "Have you ever used a condom when you had sex?" "Did you use a condom the last time you had sex?" and "Do you intend to use a condom the next time you have sex?"

A scale composed of a list of sex-specific topics measured sex-based communication between fathers and sons.⁵ Fathers responded to 16 items and sons to 13 items. Participants responded on a 0-to-3 rating scale, with 0

indicating they had not discussed the topic at all and 3 indicating that it had been discussed a lot. A sample item for fathers was, "Have you ever talked to *your son* about how he knows if he is ready to have sexual intercourse?" The automated interview substituted the adolescent's first name for the term *your son* so that the information reported was specific to the adolescent enrolled in the study. Positive responses were summed to yield a total score ranging from 0 to 48 for fathers and 0 to 39 for sons. The Cronbach α was 0.97 for the fathers' responses and 0.96 for the sons' responses.

Fathers were asked to indicate their intention regarding discussion of specific sexual topics. For each topic, fathers were asked how likely they thought it was that they would talk about the topic in the future. For each of the 16 items, the response categories ranged from 1 (definitely won't) to 5 (definitely will), for a possible total score ranging from 16 to 80. The Cronbach α for the fathers' responses to the intent questions was 0.97.

Data Analyses

Because the conceptual design of the study was a nested cohort design¹⁴ in which Boys & Girls Clubs sites were randomly allocated to either the HIV prevention (experimental) or nutrition and exercise (control) group, the analytic strategy employed was one that would account for randomization at the site level as opposed to the individual level. Although a number of strategies are available for the analysis of data with a nested structure, the small number of sites randomized to the groups was an important consideration in choosing a method of analysis. When the number of clusters is small (<10), estimation of the intraclass correlation and typical modeling methods (e.g., mixed-model regression) using SAS Proc MIXED (SAS Institute Inc, Cary, NC)¹⁵ may be unreliable.¹⁶ Therefore, we conducted analyses by using the allocation unit as the unit of analysis. Given the problems related to estimation and power presented when a small number of clusters are randomized to each group, we identified this method as the most reasonable means of analysis. In addition, this method has been shown to be robust with as few as 3 clusters.^{16,17} After aggregating data by site, we

used independent-sample *t* tests and χ^2 tests of proportions to test for group differences at each follow-up. Original sample size estimates were based on detecting a difference in abstinence rates between the HIV and control groups (estimated on the basis of data from a previous study to be 84% and 69%, respectively) at the 1-year follow-up (power=0.80) and $\alpha=0.05$ for a 1-tailed hypothesis test. Intent to treat was the primary analytic approach.

RESULTS

Description of Participants

Of the approximately 2800 potential participants, 1700 were unreachable because of telephone problems (disconnected, wrong number). Initial contact was made with approximately 1100 families; 600 were identified as potentially eligible and approximately 400 agreed to complete the screening questionnaire. Of these families, 6 were

determined to be ineligible, 12 actively declined to participate, and the remainder agreed to schedule a baseline interview. Of these, 277 fathers and their sons (total participants=554) completed the baseline interview and enrolled in the study.

The adolescents ranged in age from 11 to 14 years (mean=12.8 years, SD=1.2 years), and fathers ranged in age from 18 to 80 (mean=40.1 years, SD=11.8 years). The majority of fathers and sons were African American (97%) and lived together (70%; Table 1). The participating adult male for about 40% of the adolescents was the biological father, 15% were stepfathers, 23% were other male relatives (brother, uncle, grandfather), and 22% were some other male role model. Slightly more than one third (34%) of the fathers had completed high school, another 29% had completed some college or trade school, and 19% had completed college. Over half the fathers (55%) reported a yearly income of between \$10 000 and \$49 999.

Session Attendance

Session attendance was monitored for fathers in both the intervention and control groups. On average, fathers in the intervention group attended 45% of the sessions while fathers in the control group attended 44% of the sessions. A total of 221 fathers (80%) responded to all 4 assessments. Among those fathers not completing all assessments, 27 (10%) missed 1 follow-up, 12 (4%) missed 2, and 17 (6%) missed 3 of the 4 assessments. The number of participants from the 7 sites ranged from 28 to 72, with 4 being the maximum number of withdrawals from any 1 site. At each assessment period, the 2 study groups were roughly equal in size.

Primary Outcomes

Comparison tests that used *t* tests and χ^2 analyses were conducted to determine the equivalence of the HIV (intervention) and nutrition and exercise (control) groups at baseline testing. Baseline demographic variables for the 2 groups are reported in Table 1. The 2 study groups were similar with respect to education level, income level, percentage of biological fathers participating, percentage of fathers indicating discussion of sex-related

TABLE 1—Baseline Demographic Characteristics of Father and Son Participants, by Study Group: REAL Men, 2000–2004

Characteristics	Intervention Group (n = 141)	Control Group ^a (n = 132)	Total
Fathers' characteristics			
Mean age, y (SD)	39.5 (11.9)	40.8 (11.7)	40.1 (11.8)
African American, %	96.9	96.8	96.9
Relationship to adolescent, %			
Biological father	34.6	46.4	40.4
Stepfather	16.2	13.6	14.9
Brother	6.9	8.8	7.8
Uncle	10.8	8.0	9.4
Grandfather	5.4	5.6	5.5
Friend/other	21.5	16.0	18.8
Boyfriend of mother	4.6	1.6	3.1
Living with son, % ^b	63.1	75.8	69.3
Education level, %			
Less than high school	18.0	17.6	17.8
High school	36.7	32.0	34.4
Trade school or some college	28.9	29.6	29.2
College degree or higher	16.4	20.8	18.6
Yearly income (\$), %			
<10 000	14.5	15.7	15.1
10 000–29 999	28.2	24.3	26.4
30 000–49 999	33.9	22.6	28.5
50 000–69 999	12.1	25.2	18.4
≥70 000	11.3	12.2	11.7
Ever discussed sex-related topics with son, %	66.4	73.8	70.0
Sons' characteristics			
Mean age, y (SD)	12.8 (1.2)	12.8 (1.2)	12.8 (1.2)
African American, %	97.7	94.4	96.1
Sexual abstinence, %	75.6	76.4	76.0
Ever had sexual intercourse without a condom, ^c %	29.0	24.2	26.6

Note. Fathers included both biological fathers and father figures; see "Methods" section for a further listing of father figures. To determine group differences for means and proportions, *t* and χ^2 statistics were used, respectively.

^aThe control group was a group that participated in a nutrition and exercise program.

^bGroups different at $P < .05$.

^cPercentage of those who have ever had sex.

TABLE 2—Fathers' Reports of Discussion of Sex-Related Topics With Adolescent Sons at Follow-Up Interview, by Study Group: REAL Men, 2000–2004

Fathers' Outcomes	3-Month Follow-Up			6-Month Follow-Up			12-Month Follow-Up		
	Mean ^a (SD)	<i>P</i> ^b	95% CI ^c	Mean (SD)	<i>P</i> ^b	95% CI ^c	Mean (SD)	<i>P</i> ^b	95% CI ^c
Discussion of sex-related topics ^d									
Intervention	22.60 (14.22)	.037	0.68, 10.88	22.98 (13.97)	.162	-1.21, 3.93	23.33 (14.37)	.042	0.22, 6.41
Control ^e	18.29 (15.89)			20.38 (16.01)			19.77 (15.27)		
Intent to discuss sex-related topics ^d									
Intervention	72.75 (10.05)	.131	-2.56, 10.70	70.51 (10.12)	.319	-3.57, 5.82	70.37 (12.37)	.033	0.61, 7.32
Control ^e	70.10 (13.68)			70.50 (13.28)			67.32 (14.66)		

Note. CI = confidence interval. For intervention group, *n* = 121; for control group, *n* = 119. Fathers included both biological fathers and father figures; see "Methods" section for a further listing of father figures.

^aAdjusted for father-adolescent living status.

^bOne-tailed probability on the basis of *t* statistic.

^cOne-sided 95% CI for the mean difference between the 2 groups.

^dFor scores, see under "Measures" in "Methods" section.

^eThe control group participated in a nutrition and exercise program.

topics, and percentage of adolescents indicating that they had never had sexual intercourse. The groups were also similar with respect to age for both fathers and adolescents. However, the HIV and nutrition and exercise groups were different in terms of the percentage of participating fathers living with their sons. In the nutrition and exercise group, 76% of the fathers lived with their sons, compared with 63% in the HIV group (*P* = .03). As a result, this variable was included as a covariate in the outcome analyses.

The results of the analyses of outcomes for fathers and sons are reported in Tables 2 and 3, respectively, including 1-sided 95% confidence intervals for the mean difference between groups. At the 3-month follow-up, a smaller proportion (*P* = .06) of sexually active adolescents in the HIV group reported sexual intercourse without a condom than participants in the nutrition and exercise group, and fathers in the HIV group reported significantly more communication about sex-related topics than fathers in the nutrition and exercise group. Although no statistically significant differences were noted for the other outcomes at the 3-month follow-up, the intervention was generally more effective than the control at producing the desired outcomes. At the 6-month assessment, there were statistically significant differences in 3 outcomes for adolescents: compared with those in the control group, adolescents in the HIV group

reported higher rates of abstinence and fewer intimate behaviors. A smaller portion of sexually active participants in the HIV group reported sexual intercourse without a condom. At the final assessment, a significantly higher proportion of adolescents in the HIV group than the control group indicated that they would delay sexual intercourse until marriage and a lower proportion of those who were sexually active reported that they had sexual intercourse without a condom. Likewise, fathers in the HIV group reported significantly more discussion and greater intent to discuss sex-related topics with their sons than did fathers in the nutrition and exercise group.

DISCUSSION

Our findings showed that involving fathers could be an effective means of promoting HIV prevention practices among adolescent males. The intervention appeared to have an effect on delay of sexual intercourse, because adolescents whose fathers attended the HIV sessions had higher rates of abstinence throughout the follow-up period. The overwhelming majority of adolescents in the study were African American, and among male high school students, African Americans have the highest rate of sexual intercourse of all racial/ethnic groups.¹⁸

Although the intervention demonstrated some success in reducing the initiation of

sexual intercourse at 6-month follow-up, a more striking finding was the difference between the intervention and control groups in the proportion of sexually active adolescents who failed to use a condom each time they had sexual intercourse. These findings suggest that the program had an impact on promoting HIV prevention practices. The finding regarding condom use was noteworthy, because condom use was introduced and discussed in only 1 session, and no more emphasis was placed on this form of protection than on delaying initiation of sexual intercourse. It may be that abstinence was not an option for older adolescents, who were already engaging in sexual behaviors, but condom use was a viable preventive measure. If this is the case, offering the program to fathers whose sons are younger (aged 9–12 years) and less likely to be engaging in sexual behaviors may result in a higher proportion of adolescent boys who postpone sexual activity.

Previous interventions assessing parent-adolescent interventions have often failed to show an effect on adolescent sexual behaviors. For example, Miller et al.,¹¹ who evaluated a home-based video sex education program, found that participants in the treatment group were no more likely to delay sexual intercourse than those in the control group. School-based studies, such as those by Blake et al.¹⁰ and Levy et al.,¹² that included a parent component also found no differences

TABLE 3—Reports Regarding Sex-Related Topics Among Adolescent Boys at Follow-Up Interview, by Study Group: REAL Men, 2000–2004

Adolescents' Outcomes	3-Month Follow-Up			6-Month Follow-Up			12-Month Follow-Up		
	Mean ^a (SD)	P ^b	95% CI ^c	Mean (SD)	P ^b	95% CI ^c	Mean (SD)	P ^b	95% CI ^c
Discussion of sex-related topics ^d									
Intervention	23.19 (12.57)	.094	-1.07, 6.59	22.73 (13.91)	.111	-0.49, 3.45	23.63 (12.50)	.080	-0.57, 7.52
Control ^e	20.54 (13.51)			21.93 (14.35)			20.02 (13.73)		
Intimate behaviors ^d									
Intervention	3.50 (2.68)	.083	-2.07, 0.24	3.99 (2.64)	.050	-1.48, -0.02	4.42 (2.67)	.217	-1.48, 0.64
Control ^e	4.25 (2.75)			4.62 (2.69)			4.61 (2.96)		
Sexual abstinence rate, proportion									
Intervention	0.81	.160	-0.06, 0.18	0.75	.050	0.00, 0.11	0.67	.380	-0.11, 0.08
Control ^e	0.75			0.69			0.68		
Intentions about having sexual intercourse, ^f									
proportion									
Intervention	0.45	.110	-0.06, 0.29	0.52	.140	-0.10, 0.39	0.42	.040	0.00, 0.17
Control ^e	0.34			0.38			0.34		
Ever had sexual intercourse without a condom, ^g proportion									
Intervention	0.23	.060	-.50, .02	0.32	.120	-.42, -.07	0.23	.030	-.61, -.06
Control ^e	0.48			0.57			0.57		

Note. CI = confidence interval. For intervention group, n = 121; for control group, n = 119.

^aAdjusted for father-adolescent living status.

^bOne-tailed probability t statistic for means and χ^2 statistic for proportions.

^cOne-sided 95% confidence interval for the difference between the 2 groups.

^dFor scores, see under "Measures" in "Methods" section.

^eThe control group participated in a nutrition and exercise program.

^fOnly those who have not had sexual intercourse are included; value reflects the proportion who will delay sexual intercourse until marriage.

^gOnly those who have had sexual intercourse are included; value reflects the proportion who responded yes.

between treatment and control groups in the delay of sexual involvement. Likewise, a variety of community-based programs designed for parents and adolescents failed to demonstrate differences in the rates of sexual intercourse of adolescent participants.^{9,19,20}

One possible explanation for the difference in outcomes between our study and previous research is the involvement of fathers in the current program. Although many of the previously mentioned programs included both parents, more mothers tended to participate in the programs than fathers, and some were limited to mothers and daughters. The results of the present study suggest that messages on HIV prevention delivered by the father can carry significant weight. The father's mere attendance at the program may have also impressed on the son the father's concern for his well-being and the importance of HIV prevention practices. Our findings demon-

strate the efficacy of public health interventions in which parents are the primary target in addition to those in which they play a supportive role.

The findings related to abstinence and intimate behaviors suggested that the program had a significant short-term effect in delaying the initiation of sexual intercourse and behaviors that lead to it; however, the long-term efficacy of the program in promoting abstinence was not observed. The program lasted 7 weeks and did not include booster sessions. Booster sessions or follow-up meetings over the course of the year might have been helpful in reminding fathers to talk with their sons; they should be considered for future father-son programs.

Limitations

Limitations to the study included the sample, the use of self-report measures, the length

of the intervention, and the use of site as opposed to individual randomization. The participants for the study were recruited from Boys & Girls Clubs of Metro Atlanta. Boys who attend the after-school and summer programs offered by Boys & Girls Clubs, and their fathers, are likely to be different from fathers and sons who are not involved with this or similar community-based organizations and thus not entirely representative of the broader community. A replication of the study with a sample randomly selected from the community would help determine if the program is generalizable to a wider community. Self-report is subject to social desirability response bias (i.e., the tendency of respondents to agree with statements associated with healthier behaviors or attitudes and disagree with statements associated with unhealthy behaviors or attitudes). Fathers in the intervention groups might have reported

more discussions with sons at follow-up because the program expected it. However, the matching reports of the sons whose fathers were in the intervention group seem to verify that the fathers' reports were accurate.

The intervention was only 7 weeks long. Many fathers recommended that the intervention be lengthened to include several more sessions. Because many fathers have never talked to their sons about sexual issues, fathers may need more time to develop skills for such discussions. On the other hand, despite an excellent retention rate—90% of participants completed 3 or more assessments—on average, fathers participated in fewer than half of the sessions. Given the fact that many fathers did not receive the full intervention, the results of the study are fairly impressive. The low attendance rate suggests that fewer rather than more sessions might be necessary to retain some participants. One strategy could be to decrease the number of sessions while increasing the length of each session. Finally, only 6 sites (3 for each group) were selected for the study. Current thinking on group-randomized trials suggests that more sites should be randomized to each group.²¹

Conclusions

Our findings show that involving fathers in sex education can be an effective means of promoting HIV prevention practices among adolescent males. Creating public health messages directed at fathers can be a first step to encourage fathers to take an active role in educating their sons about HIV. Community-based organizations and schools that offer programs for parents can include educational sessions such as those delivered in the REAL Men program. Because this is the first program for fathers and sons that has been evaluated in a systematic study, future research should include additional evaluation of the program and the development of variations that might include a self-study booklet and an Internet-based program for fathers whose schedules make it difficult to attend group sessions or who prefer another mode of learning. In addition to different modes of learning, further studies should focus specifically on factors that may enhance participation rates—for example,

variations in scheduling and Internet-based delivery. ■

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Contributors

C. DiIorio initiated the study, supervised the conduction of the study, and drafted the article. F. McCarty assisted with the study, conducted the data analyses, and assisted with drafting the article. K. Resnicow assisted with the study, data analysis, interpretation of results, and revision of the article. S. Lehr assisted with the implementation of the intervention, supervision of facilitators, and revision of the article. P. Denzmore supervised the implementation of the study and assisted with the revision of the article.

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Human Participant Protection

This study was approved by the institutional review board of Emory University and by the Boys & Girls Clubs of Metro Atlanta.

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