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Determinants of Adolescent Female Attendance at an HIV Risk Reduction Program

Dianne Morrison-Beedy, PhD, RN, FNAP, FAANP, FAAN [Professor and Endowed Chair for Nursing Science Assistant Dean for Research],

School of Nursing, University of Rochester, Rochester, NY

Michael P. Carey, PhD [Professor and Director],

Center for Health and Behavior, Syracuse University

Hugh F. Crean, PhD [Assistant Professor of Clinical Nursing], and

School of Nursing, University of Rochester, Rochester, NY

Sheryl H. Jones, PhD, RD [Research Associate Faculty]

School of Nursing, University of Rochester, Rochester, NY

Abstract

This study investigated attendance at an HIV prevention randomized controlled trial for urban adolescent females. The intervention included four 2-hour sessions that were held at convenient community-based locations. Participants were recruited from reproductive and general health care clinics, as well as youth development programs. Of the 744 girls who consented to participate in the research study, 86% ($n = 640$) attended one or more of the risk reduction sessions but 14% ($n = 104$) did not attend any sessions. Data analyses indicated that girls who attended were more likely to be younger, African American, and non-Hispanic. They also reported earlier sexual debut and more recent sexual partners. Results indicate that sexual risk reduction interventions are attractive to many at-risk female adolescents. Strategies to improve attendance are described for this vulnerable population sub-group.

Keywords

adolescent girls; HIV prevention; intervention attendance; sexual risk

Girls account for the vast majority of heterosexually-acquired cases of HIV in adolescence, and they also bear a disproportionate burden of sexual risk co-morbidities such as unintended pregnancies and sexually transmitted infections (STIs; Centers for Disease Control and Prevention [CDC], 2009). Programs to reduce risk and promote sexual health need to be developed, refined, implemented, and evaluated for adolescent girls. To impact the health of adolescent girls and young women, such programs must be attended by girls who are at risk; that is, improving the health of adolescent girls hinges upon practitioners' and researchers' abilities to enroll and retain participants, especially those at greatest risk.

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Enrolling adolescent girls in sexual health programs and research studies entails a number of challenges. Adolescent girls often do not have access to transportation, and they often have competing commitments (i.e., family, school, employment, and social). Girls may be hesitant to enroll in research that addresses stigmatized topics such as sexual health, STIs, or HIV because participation might be misconstrued (e.g., the girls “must be” sexually active or interested in sex); such misconstruals may worry parents or other adults, undermine girls’ reputations, or bring unwanted scrutiny. Researchers need to identify and address such barriers to participation if the public health reach of risk reduction and sexual health promotion programs is to be effective.

A number of recent studies have investigated predictors of attendance at sexual risk reduction programs among adults. For example, Vanable, Carey, Carey, and Maisto (2002) examined participation and attrition in a randomized trial evaluating methods to reduce HIV-related risk among adult psychiatric outpatients with a mental illness. Here, attendees were more likely to be older, to have a more serious mental disorder, and to have had a recent sexually transmitted infection (STI) diagnosis. More recently, Senn, Carey, Vanable, Coury-Doniger, and Urban (2007) investigated whether patient characteristics were associated with attendance at a single-session, sexual risk reduction intervention for adults conducted at an STI clinic. They found that patients who did not attend were more likely to be younger, male, Caucasian, and employed. Attendance did not differ as a function of sexual risk behavior. These findings with adults provide important information about participation but do not address the important developmental or gender issues that may be most important to adolescent females.

To our knowledge, only one study has investigated participation in a sexual risk reduction program among adolescents. In this study, Villarruel, Jemmott, and Jemmott (2006) examined participation among a small sample ($n = 106$) of Latino adolescents. They found that peer and family support, financial incentives, and desire to help were associated with participation, whereas time conflicts, embarrassment, and lack of peer support undermined participation. The only predictor of attrition during the course of the intervention groups was English language fluency.

Overall, little is known about factors that influence participation by female adolescents in sexual health and HIV prevention programs and research studies. Identifying the factors that predict participation and developing strategies to address those factors may help to increase the public health “reach” of such programs as well as the external validity of scientific studies testing interventions. Therefore, the purpose of this study was to examine whether demographic characteristics, sexual and substance use history, and current risk behavior were associated with attendance at an HIV risk reduction program for urban, adolescent girls.

Methods

Sample

Adolescent girls recruited from several health and social service settings (i.e., urban reproductive and general health care clinics, youth development programs) were screened for eligibility. Inclusion criteria were: (a) female; (b) between 15 and 19 years old; and (c) had engaged in sexual behavior with a male partner in the previous 3 months. Exclusion criteria were: (a) married, (b) pregnant, (c) had borne a child within the previous 3 months, (d) planning to move from the area in the next year, and (e) had difficulties reading and speaking English that would interfere with the ability to participate meaningfully in groups.

Of the 1,778 girls screened, 765 (43%) were ineligible (71% because they had not had sex in the previous 3 months, 23% because they were pregnant or recently had a baby, and the remaining 6% for various reasons such as plans to move out of town). Of the 1,013 teens who

were eligible, 744 (73%) completed the consent process and provided baseline data. Of those who did not consent, nearly all reported not having the time to participate as the predominant reason for opting out.

Measures

Sociodemographic characteristics—Three items requested information on age, race, and ethnicity. We also assessed marital and living status as well as income level with free lunch status used as a proxy measure.

Sexual history and current risk behavior—Items to assess sexual risk behavior were adapted from previous research (Carey et al., 2000; Carey et al., 2004; Carey et al., 1997), and assessed the number of male and female sexual partners (lifetime and previous 3 months), and the number of occasions of protected and unprotected vaginal and anal sex (previous 3 months) with steady and non-steady partners. Consistent with prior recommendations (Schroder, Carey, & Vanable, 2003), responses were summed to determine the number of episodes of protected and unprotected sex (vaginal and anal) in the previous 3 months with steady and non-steady partners. Additional items asked about sex trading/survival sex (i.e., the number of times sex was exchanged for money, food, drugs, or a place to stay); contraceptive, pregnancy, and STI history; and a history of forcible sexual contact measured by the Sexual Experience Scale (Koss & Gidycz, 1985; Koss & Oros, 1982). We measured each participant's age at first vaginal, oral, and anal sex as well, and asked her to estimate the age of her current main sexual partner.

Substance use—Because previous research indicated that substance use before sex may increase the likelihood of high-risk sexual behaviors (Scott-Sheldon, Carey, & Carey, in press; Scott-Sheldon et al., in press), we assessed the co-occurrence of alcohol and/or drug use prior to sex by partner type. We also measured the number of times participants had used 10 individual drugs including cigarettes, marijuana, and ecstasy in their lifetime and in the previous month. We asked about intake of alcohol during the previous 3 months including average consumption and binge drinking. All items had been used in previous research (Carey et al., 2004). We also asked whether their partners had used alcohol and/or drugs before last sex with them.

STIs—We also tested for incident STIs following survey data collection. Urine specimens were collected to test for STIs common to adolescent girls, *Chlamydia trachomatis* (CT) and *Neisseria gonorrhoea* (GC).

Procedures

Ethical review and human subject protections—Prior to implementation, study procedures were approved by the University of Rochester and Syracuse University Institutional Review Boards and the national office of Planned Parenthood. We also obtained a Federal Certificate of Confidentiality to protect participant privacy.

Screening—Screening was completed using a two-tiered approach: recruiters first screened for age, then completed the remaining screening questions with age-eligible girls in a private area of the recruitment site. Screening took place from December 2004 to April 2008, with intervention groups starting in January 2005.

Consent and tracking processes—Informed consent involved reviewing all sections of the consent form with the participant, answering all questions, initialing every page, full signature on the last page, and sign-off by a participant advocate from the clinic to ensure protection of persons identified as a vulnerable population. The tracking information form

provided detailed data on contacting the participant with home and cell phone numbers, as well as numbers for family and friends who had regular contact with the participant. In addition, specific guidelines were obtained from the participant about what could be said to each contact (e.g., how to identify ourselves, if a voice message could be left).

Baseline data collection—Self-reported baseline data were collected by audio computer-assisted self-interview (ACASI). Participants were compensated \$10 for completing the baseline assessment. After completing the ACASI, the girls were told how to provide a clean urine specimen. We tested the specimen for CT and GC using the Becton Dickinson BD ProbeTecET Amplified DNA Assay urine processing kit. Adolescents were considered “enrolled” after they provided informed consent and tracking information, indicated that they had time to attend the intervention sessions, completed the ACASI baseline measures, and provided a urine sample for CT and GC.

Prompts to attend the intervention session—Participants were contacted (i.e., called, e-mailed, mailed) two times in the week prior to every intervention session. If a primary phone number or e-mail address did not work, research assistants followed structured procedures for the next type of contact to attempt including friends or family members.

Data analyses—Baseline data were analyzed to characterize the sample and depict the sexual, contraceptive, pregnancy, and substance use histories of participants. We also determined the percentage of total sexual episodes that involved unprotected sex with participants’ steady partners and other partners. Next for further analysis, we divided the sample into two groups (a) those who attended any subsequent intervention groups and (b) those who did not attend any groups, and compared these groups on the baseline variables of interest.

Results

The majority of girls who met eligibility criteria ($N = 744$; 73%) participated in the study. Tables 1 and 2 present the demographic and behavioral variables for both the entire sample of consenters as well as the sample separated by those who attended group intervention sessions and those who did not (group attendees non-group attendees). As noted, the average age was 16.5 years; most girls self-identified as non-Hispanic (83%) with 81% self-identifying as African American or multiracial (see Table 1). The majority of girls (85%) lived in their parents’ homes or apartments. The sample was largely impoverished, with 70% participating in the federal government’s free/reduced lunch program.

Sexual History and Behaviors

The average participant became sexually active at a relatively early age; the mean age at first vaginal sex was 14.4 years old ($Mdn = 14$) with the average age of first oral ($M = 15.2$) and first anal ($M = 15.7$) sex occurring shortly thereafter. The average age difference between the consenting girl and her steady sexual/main partner was 2.15 years. Although only 10% of the girls had a child, 26% reported having ever been pregnant and 13% reported having had an elective abortion. Twenty-three percent of the girls reported not using any birth control at present, with more than 40% of the sample’s total number of vaginal sex episodes in the previous 3 months reported as unprotected. Nearly one third (29%) of the participants had more than one sexual partner in the previous 3 months, with 13% having three or more during that time. Both current and past STI history indicated these girls were at elevated risk for HIV. More than one third (39%) reported being treated for an STI, with 11% testing positive for either GC or CT at their baseline assessment; only 62% of all participants reported they had ever been tested for HIV.

Substance Use of Participants

Study participants also reported recent alcohol and other drug use (Table 1). Overall, 51% of the girls who consented reported using alcohol in the previous 3 months with 28% reporting heavy episodic or *binge* drinking (ie., *4 or more drinks at one episode*; Wechsler et al., 2003). These rates were observed even though the eldest girls in the sample were 19 years old — below the legal drinking age in New York State. More than 40% reported using marijuana in the previous 3 months, and 16% smoked cigarettes. In addition, nearly one quarter of the girls either drank alcohol (23%) or used drugs (24%) before sex during the previous 3 months, with 14% using both substances prior to sex.

Correlates of Attendance at Group Sessions

Examination of the differences between those who attended one or more sessions (attendees) and those who did not attend any sessions (non-attendees) indicated a number of differences on baseline characteristics and behaviors (see Tables 1 and 2). Overall, attendees were younger ($M = 16.42$, $SD = 1.23$ vs. $M = 17.13$, $SD = 1.32$, $F = 28.58$, $p < .001$), and more likely to be African American (72% versus 52%, $c^2 = 24.96$, $p < .001$) than non-attendees. Group attendees were also less likely to be Hispanic (16% vs. 25%, $c^2 = 5.37$, $p = .02$). Attendees also had their first vaginal sex episode at a younger age than non-attendees (attendees $M = 14.35$, $SD = 1.42$; non-attendees $M = 14.95$, $SD = 1.65$, $F = 14.33$, $p < .001$); they also reported a higher number of partners, on average, over the previous 3 months (attendees $M = 1.46$, $SD = 1.10$; non-attendees $M = 1.22$, $SD = 0.82$, $F = 4.65$, $p = .03$). There were no other significant differences on sexual, contraceptive, pregnancy, smoking, drug, and alcohol data between attendees and non-attendees (see Tables 1 and 2).

Discussion

The vast majority of girls eligible for this HIV prevention intervention trial consented to participate and provided baseline data. Because girls who declined participation could not be asked to provide data, we do not know if girls who did not consent to participate differed from those who did consent. Based on both their self-report and biological data, girls who did consent were at-risk for HIV and other problems related to sexual activity. On average, participants reported penetrative sex twice a week, often without condoms or other contraception. Even though many reported a history of STI, pregnancy, coercive sex, and multiple partners, nearly 40% had not yet been tested for HIV. No girl who consented with the research team recruiter later declined to participate after meeting alone with an impartial study advocate. This suggested that girls who consented or assented did so because they were genuinely interested in participating and did not feel pressured to do so.

Even so, consenting to participate did not guarantee attendance at intervention sessions. Of the group of girls who consented, the majority (85%) did attend intervention groups that began several weeks later. Relative to girls who did not attend groups, girls who attended were more likely to be African American, non-Hispanic, and younger. It could be that older girls (post high school) could not attend the sessions that were held primarily in the hours immediately after school, yet this time was very conducive to those girls in high school. Ability to participate in an English-speaking program was an eligibility requirement for this study, and it should be noted that we had no girls who requested or required to have the consent process be provided in Spanish. However, fewer Hispanic girls may have attended groups because they did not feel as comfortable participating in a group provided in English.

Girls who attended and those who did not attend were similar on numerous sexual history and current behavior variables. Thus, for example, they did not differ on age or age differential of main partner, total number of vaginal sex episodes, or count of protected and unprotected sex

occasions in the previous 3 months. Their contraceptive, pregnancy, STI, and HIV testing histories did not differ nor did their reports of coercive sexual experience. These two groups reported similar cigarette, drug, and alcohol use, including using substances prior to having sex. Conversely, girls who attended groups had experienced vaginal sex at a slightly younger age and had more sexual partners, on average, during the previous 3 months than those who did not attend groups. Whether the differences for sexual debut (14.35 vs. 14.95 years) and for number of recent sex partners (1.46 vs. 1.22) were clinically substantial is unclear; it is unlikely that intervention recruitment and retention strategies would differ based on these differences. Overall, we did not find substantial evidence to suggest that the girls who consented but then did not attend intervention groups had considerably lower or higher pregnancy, contraceptive, sexual, and substance use risk behaviors. However, where behavioral differences did arise (age at first vaginal sexual experience and number of partners in the previous 3 months), girls who attended the intervention were at higher risk. To the extent possible, we are confident that the results of our randomized intervention will generalize to an important and often understudied population of urban adolescent girls at risk for HIV and other STIs.

Strategies to Improve Attendance

Based on our experiences, we recommend the following strategies to increase attendance at sexual risk reduction and health promotion programs for adolescent girls. We offered program sessions during weekday later-afternoon hours (i.e., after school) so that girls would not need to be out after dark; given the geographical location of the study in the Northeast United States, darkness would occur fairly early in the evening during wintertime. However, these hours might have been somewhat restrictive for older girls who were employed or attending college classes, thus, offering additional sessions later in the evening might increase the attendance of older participants. Similarly, offering sessions on weekends, as well, might increase attendance of girls whose weekday schedules are filled with conflicting after-school activities and other events. In addition, at the onset of the study, we recruited girls but did not provide them with a date for their group session until after 8–10 girls had been recruited for that group. At times, this took longer than expected and girls had to wait for their scheduled sessions. Ultimately, this sometimes resulted in a participant being unable to attend groups for various reasons (e.g., schedule conflict, change in transportation) by the time they were provided a date for attendance. We changed this approach to provide girls with their group session date immediately upon completing baseline data and advised them to block out these scheduled sessions on their calendars; this approach worked well with adolescents who often have a short-term perspective of time management.

Based on participant feedback, we also modified our tracking protocol by adding a 24-hour reminder phone call prior to group meetings in addition to our previously planned phone reminders (that included a 48–72 hour call). We also discussed at this phone call how girls planned to get to groups so that brainstorming solutions for transportation difficulties could take place if transportation was a barrier. These are all approaches that can increase adolescents' attendance at similar programs. Certainly, interventions developed in the language of choice for participants may increase enrollment for girls of Hispanic ethnicity. Obtaining additional feedback and input from girls who match the characteristics of those who do not attend sessions would be valuable as well.

Study Strengths and Limitations

Our study is one of a small number to examine differences between those adolescents who attend HIV prevention intervention groups and those who do not. Strengths of this study include the focus on adolescent girls, diverse sampling venues, and documenting the detailed demographic and sexual risk-related behaviors of a large sample of urban girls. The fact that we had somewhat younger girls attend sessions is promising in that the earlier we can affect

positive behavior change in individuals, the less risk exposure they may have over time. Similarly, group attendance included a higher percentage of girls of color than did the non-attendees group, which is particularly encouraging because communities of color continue to bear the brunt of the HIV epidemic.

Study findings should be considered mindful of several limitations. First, we were unable to compare differences in risk histories between girls who consented and those who refused. Future work might ask non-consenters if they would be willing to answer just a few questions to explore reasons for declining and to assess risk profiles of these girls as well. Second, the effects of participant incentives and intensive tracking are typical of research studies but not common in programs offered by public health practitioners. It is not clear what influence these features have on attendance at intervention groups. It is possible that incentives help and tracking hurts but our data do not allow us to test this hypothesis. Because such aspects would not be included in dissemination or translational efforts in the community, generalizability to non-research trial programs should not be assumed. Third, we had a limited number of White, Asian, and other racial/ethnic participants relative to African American participants. While this reflected our recruitment venues in an urban Northeastern environment, expansion of interventions to rural and other racially, ethnically, and globally diverse areas is needed if we are to successfully confront the HIV/STI epidemics in adolescent girls.

Summary

In summary, the majority of at-risk urban adolescent girls recruited for a multi-session HIV prevention trial attended the intervention. Girls who attended these sessions differed from those who did not attend on only a few demographic or risk behavior variables, providing evidence that those girls who could benefit from such an intervention both will agree to do so and take part in it.

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Table 1

Demographic and Behavioral Characteristics of Consenters ($N = 744$), Group Attendees ($n = 640$), and Group Non-Attendees ($n = 104$) with Tests of Categorical Differences Between Group Attendees Versus Group Non-Attendees

	Consenters ($n = 744$)	Group Attendees ($n = 640$)	Group Non-Attendees ($n = 104$)	χ^2	df	p
Race						
Black	518 (70%)	464 (72%)	54 (52%)			
White	69 (9%)	48 (8%)	21 (20%)			
Mixed/Multiracial	84 (11%)	71 (11%)	13 (13%)			
Other	73 (10%)	57 (9%)	16 (15%)	24.964	3	< .001
Hispanic	127 (17%)	101 (16%)	26 (25%)	5.371	1	.02
Living Situation						
Family's apartment or home	($n = 736$)	($n = 633$)	($n = 107$)			
Own apartment or home	623 (85%)	537 (85%)	86 (84%)			
Other	58 (8%)	48 (8%)	10 (10%)			
Poverty	55 (7%)	48 (7%)	7 (6%)	.600	2	.74
Free/reduced lunch	($n = 738$)	($n = 634$)	($n = 104$)			
Sexual History	515 (70%)	446 (70%)	69 (66%)	.678	1	.41
Ever pregnant	($n = 735$)	($n = 634$)	($n = 101$)			
Had child(ren)	192 (26%)	161 (25%)	31 (31%)	1.267	1	.26
Use birth control pill or shot	72 (10%)	59 (9%)	13 (13%)	1.253	1	.26
No birth control	279 (38%)	234 (37%)	45 (45%)	2.163	1	.14
Had sex for money, drugs, food, or place to stay	169 (23%)	151 (24%)	18 (18%)	1.769	1	.18
Ever tested for HIV	50 (7%)	43 (7%)	7 (7%)	.003	1	.96
Ever treated for STI	458 (62%)	396 (63%)	62 (61%)	.043	1	.84
Forced Sex	286 (39%)	253 (40%)	33 (33%)	1.917	1	.17
Penetrative sex against will using physical force	($n = 730$)	($n = 631$)	($n = 99$)			
Time with Steady Partner	99 (14%)	89 (14%)	10 (10%)	1.170	1	.28
Less than 3 months	($n = 642$)	($n = 555$)	($n = 87$)			
3 months to 1 year	124 (19%)	111 (20%)	13 (15%)			
More than 1 year	279 (44%)	242 (44%)	37 (43%)			
Substance Use	239 (37%)	202 (36%)	37 (42%)	1.776	2	.41
Marijuana	($n = 735$)	($n = 634$)	($n = 101$)			
	304 (41%)	261 (41%)	43 (43%)	.071	1	.79

	Consenters	Group Attendees	Group Non-Attendees	χ^2	df	p
Cigarettes	121 (17%)	100 (16%)	21 (21%)	1.596	1	.21
Alcohol (any use)	371 (51%)	314 (50%)	57 (56%)	1.664	1	.20
Alcohol (4 or more drinks in past 3 months)	204 (28%)	170 (27%)	34 (34%)	2.038	1	.15
Substance Use Before Sex	(n = 685)	(n = 593)	(n = 92)			
Alcohol before sex	175 (26%)	147 (25%)	28 (30%)	1.335	1	.25
Drugs before sex	172 (25%)	152 (26%)	20 (22%)	.642	1	.42

Note. STI = sexually transmitted infection.

Table 2

Demographic and Behavioral Characteristics of Consenters ($N = 744$), Group Attendees ($n=640$), and Group Non-Attendees ($n=104$) with Tests of Mean Differences Between Group Attendees Versus Non-Attendees

	Consenters		Group Attendees		Group Non-Attendees		<i>F</i>	<i>p</i>
	<i>n</i>	<i>M</i> (<i>SD</i>)	<i>n</i>	<i>M</i> (<i>SD</i>)	<i>n</i>	<i>M</i> (<i>SD</i>)		
Age	744	16.52 _(1.27)	640	16.42 _(1.23)	104	17.13 _(1.32)	28.58	< .001
Age of main partner	639	18.68 _(3.68)	552	18.62 _(3.76)	87	19.03 _(3.16)	.94	.33
Age difference	639	2.15 _(3.39)	552	2.19 _(3.49)	87	1.91 _(2.73)	.51	.48
Age of first vaginal sex	697	14.43 _(1.47)	599	14.35 _(1.42)	98	14.95 _(1.65)	14.33	< .001
Age of first oral sex	394	15.24 _(1.63)	327	15.17 _(1.60)	67	15.58 _(1.76)	3.60	.06
Age of first anal sex	179	15.74 _(1.64)	154	15.69 _(1.61)	25	16.00 _(1.85)	.74	.39
Number of children	735	.11 _(.35)	634	.11 _(.35)	101	.14 _(.37)	.77	.38
Number of birth control methods endorsed (up to 5)	735	.98 _(.67)	634	.97 _(.67)	101	1.06 _(.66)	1.72	.19
<i>In previous 3 months...</i> ^a								
Number of times vaginal sex	734	15.56 _(18.35)	633	15.31 _(18.26)	101	17.11 _(18.94)	.84	.36
Number of times protected vaginal sex	734	6.64 _(8.62)	633	6.73 _(8.63)	101	6.08 _(8.55)	.50	.48
Number of times unprotected vaginal sex	734	6.72 _(9.82)	633	6.52 _(9.64)	101	8.00 _(10.82)	1.99	.16
Proportion unprotected vaginal sex	665	.41 _(.36)	575	.40 _(.35)	90	.46 _(.37)	2.80	.10
Number of partners	735	1.43 _(1.07)	634	1.46 _(1.10)	101	1.22 _(.82)	4.65	.03

^aTo help minimize effects of extreme responses in count data, count variables were trimmed using (3*Interquartile Range) + 75th percentile score + 1