

Self-Efficacy for Sexual Risk Reduction and Partner HIV Status as Correlates of Sexual Risk Behavior Among HIV-Positive Adolescent Girls and Women

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Abstract

Little is known about the correlates of sexual risk behavior among HIV-positive adolescent girls and women in the United States. This study investigates two potential factors related to unprotected vaginal and anal intercourse (UVAI) that have yet to be thoroughly studied in this group: self-efficacy for sexual risk reduction and partner HIV status. Data was analyzed from 331 HIV-positive adolescent girls and women between 12 and 24 years old who reported vaginal and/or anal intercourse with a male partner in the past 3 months at fifteen sites across the United States. Results show that overall self-efficacy ($B = -0.15, p=0.01$), self-efficacy to discuss safe sex with one's partner ($B = -0.14, p=0.01$), and self-efficacy to refuse unsafe sex ($B = -0.21, p=0.01$) are related to UVAI episodes. Participants with only HIV-positive partners or with both HIV-positive and HIV-negative partners showed a trend towards higher percentages of UVAI episodes compared to participants with only HIV-negative partners ($F(2, 319) = 2.80, p=0.06$). These findings point to the importance of including self-efficacy and partner HIV status in risk-reduction research and interventions developed for HIV-positive adolescent girls and young women.

Introduction

OVER 29,000 YOUNG WOMEN AND GIRLS between 13 and 24 years old are living with HIV in the United States.¹ The number of new infections among young women and girls in this age range is an ongoing problem; from 2001 to 2004, they accounted for 38% of new HIV and AIDS diagnoses within this age group.² Despite women's representation in the HIV epidemic, there is a lack of research on the sexual behaviors and related health risks of young women and girls living with HIV. Additional research is needed to better understand the sexual health behaviors of HIV-positive young women and girls within the context of gender-based issues, such as susceptibility to sexually transmitted infections, unintended pregnancy, and secondary HIV infection.

The sexual health of HIV-positive women and their partners is often dependent upon the use of condoms during intercourse. It is estimated that up to 60% of people living with HIV engage in unprotected intercourse; this increases the risk of secondary HIV infection, unintended pregnancy, sexually transmitted infections that may accelerate HIV disease pro-

gression, and transmission of HIV to HIV-negative partners.^{3,4} A study of HIV-positive African American women between 18 and 30 years old showed that about one-third of young women used condoms inconsistently; however, condom use varied by age within the sample.⁵ For HIV-positive women, these variations in condom use may be affected by their partner's HIV status. Past research has demonstrated that HIV-positive young women are less likely to use condoms with their HIV-positive partners, which puts HIV-positive women at risk for unintended pregnancy, STIs, and secondary HIV infection.^{3,5,6} Unprotected sex is not the only sexual behavior that puts young HIV-positive women at risk, however. Limiting the number of sexual partners may reduce the risk of transmitting or contracting an STI to or from a new partner, including HPV, a virus related to cervical cancer for which condom use is not always protective.⁷

Gender roles and the social positioning of women and girls within romantic and sexual relationships may uniquely affect condom use and the number of sexual partners among women and adolescent girls. Although most studies on adolescent girls' and women's sexual risk practices have focused on

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condom use, women and girls do not directly control the use of condoms in sexual situations.⁸ Use of condoms requires cooperation of a male partner, and men are ultimately in control of condom use during a sexual encounter.⁸ For these women and girls, whether a condom is used in a given sexual encounter is therefore dependent, at least in part, upon condom use negotiation—and one's feelings of self-efficacy to negotiate condom use effectively. Likewise, a girl's or woman's number of sex partners may be partially driven by her ability to negotiate her own sexual behavior. The traditional role of a girl or woman in a sexual relationship is that of a passive partner who does not assert her needs or desires in a sexual relationship.⁹ Traditional gender roles also assume female sexual availability, which often results in girls and young women being coerced into sexual partnerships they do not want.¹⁰ Sexual risk behaviors in HIV-positive young women and girls may thus be driven by their ability—or lack thereof—to discuss condom use with their sexual partners, disclose their HIV status, and refuse sex in sexual situations in which they may be tempted or pressured into having unprotected sexual intercourse.

Self-efficacy, a self-referential judgment of how well one can exert control over their own behaviors, has been suggested as one way to understand the negotiation of HIV risk behaviors in sexual contexts, especially among women.^{5,11} Self-efficacy can be both global and specific to certain types of tasks, and women's and girls' feelings of self-efficacy specifically for reducing risk behavior with sexual partners may be an important antecedent to condom use. Previous research including HIV-positive women has provided evidence that older women are more likely to have safe sex if they have higher self-efficacy to discuss safe sex with partners.^{3,5,8}

Some limited research with HIV-positive girls and women has also shown that belief in one's skill at condom use negotiation is important for condom use. HIV-positive young women often avoid discussions about safe sex because they want to avoid interpersonal conflict, and they often feel they do not know how to bring up condom negotiation without such a conflict.¹² Given girls' and women's diminished control over condom use in sexual situations, self-efficacy specifically for sexual risk reduction may be especially useful in understanding the ways in which women negotiate condom use and/or unsafe sex refusal within sexual situations.^{6,13} Self-efficacy for sexual risk reduction may also influence the number of sexual partners girls and women have; girls and women who feel unable to discuss safe sex or refuse unsafe sex with sexual partners might be pressured into sexual relationships that they do not want, or they may feel pressured to have sex with more partners than they might otherwise desire.¹⁰

Although there is extant literature connecting sexual self-efficacy to sexual risk behavior,^{14–16} it is necessary to gain a more nuanced understanding of self-efficacy for skills specifically related to living with HIV—such as self-efficacy to disclose one's HIV status—in order to better understand if there are specific aspects of self-efficacy for sexual risk reduction that may be useful for decreasing sexual risk among HIV-positive individuals.

Consequently, the goal of the present analysis is to examine the associations between self-efficacy with potential partners and recent unprotected vaginal and anal intercourse (UVAI) as reported by HIV-positive adolescent girls and

women between 12 and 24 years of age. Exploring these relationships will expand our knowledge on the roles of self-efficacy in predicting sexual risk behaviors among HIV-positive young women. With additional insight about the sexual behaviors of young women and girls living with HIV, researchers can better identify resiliencies and sources of risk within this population and understand the ways in which HIV-positive young women's sexual health and well-being may be improved.

Methods

Study description

We conducted a secondary data analysis of cross-sectional data collected as part of the Adolescent Medicine Trials Network for HIV/AIDS Interventions ATN protocols 086 and 106. The ATN is a collaborative network of clinical adolescent medicine sites that have ongoing data collection activities highlighting health concerns of HIV-positive youth. ATN 086 and 106 were both cross-sectional, multi-site studies conducted in 15 Adolescent Medicine Trials Units (AMTUs), which are clinics and hospitals across the United States that provide care for HIV-positive youth. Data for ATN 086 were collected between October 2009 and March 2011, and data for ATN 106 were collected from February 2011 through August 2012.

Participants

Participants were a nonprobability sample of 331 HIV-infected adolescent girls and women who reported vaginal and/or anal intercourse with a male partner in the past three months. All participants were between the ages of 12 and 24, inclusive. These participants were part of a larger sample of 1712 HIV-positive adolescents and young adults who participated in a survey study of psychosocial and behavioral risk factors related to HIV transmission risk and treatment behaviors conducted by the Adolescent Medicine Trials Network for HIV/AIDS Interventions (ATN). Adolescents were eligible for inclusion in the study if they (1) had laboratory evidence of HIV-1 infection at any time; (2) had knowledge of their HIV-positive diagnosis; (3) were between the ages of 12 and 24 years, inclusive; (4) were engaged in care at one of 15 participating AMTUs, which was defined as at least one clinic visit during the enrollment period of the study; and (5) were able to understand written and verbal English.

Out of 1712 participants, 732 (42.3%) were adolescent girls and women. Seventeen (2.32%) of the girls and women were identified as male at birth; they were excluded from the present analysis. Participants who did not engage in anal or vaginal intercourse with a male partner in the 3 months prior to the baseline assessment were also excluded from the present analysis, leaving the final sample of 331 (45.2% of the girls and women in the original sample and 19.3% of the original sample overall) who reported having UVAI in the past 3 months. Participants who engaged in UVAI in the past 3 months were on average 1.7 years older than the girls and women who did not report having UVAI. Contracting HIV from sexual intercourse with a man was reported by 59.5% of participants in the final sample, versus only 29.9% of the girls and women who did not report UVAI during the study period.

Additionally, the girls and women who did not report UVAI in the past 3 months were more likely to report having been born with HIV than participants in the final sample. There were no differences between the final sample and excluded girls and women by racial/ethnic group.

The mean age of participants included in the final analysis ($n=331$) was 20.5 years old. Participants were predominantly black/African American (72.2%), and one-fifth (18.1%) of the sample identified as Hispanic or Latino. Almost half (45.4%) of participants were currently in school, and the majority of participants (70.4%) were single. The vast majority of participants (84.6%) identified as straight/heterosexual; a significant proportion (13.6%; $N=45$) identified themselves as bisexual. Only 0.9% ($N=3$) identified themselves as lesbian. Most of the participants reported that they were infected with HIV through heterosexual intercourse 59.5%. A further 30.8% of the participants said they were perinatally infected. The remaining participants said they contracted HIV through other means, which included injection drug use (3.9%); that they did not know how they were infected with HIV (4.5%); or that they received it through a blood transfusion (0.9%). See Table 1 for additional sample characteristics.

TABLE 1. DEMOGRAPHICS OF SAMPLE (N=331)

Demographic	%	Mean	SD
Age		20.5	2.35
Ethnicity			
Not Hispanic/Latino	81.9		
Hispanic/Latino	18.1		
Race			
Asian/Pacific Islander	1.2		
Black/African American	72.2		
Native American/Alaska native	0.9		
White	12.4		
Mixed race	8.2		
In school			
Yes	45.4		
Have graduated	17.5		
No	37.2		
Highest education completed			
High school/GED	33.6		
Some college	24.2		
College/tech school graduate	6.3		
Sexual orientation			
Straight/heterosexual	84.6		
Lesbian	0.9		
Bisexual	13.6		
Questioning	0.9		
Relationship status			
Single	70.4		
Living with a steady partner	18.4		
Married	6.7		
Divorced	0.6		
HIV transmission route			
Perinatally infected	30.8		
Heterosexual intercourse	59.5		
Blood transfusion	0.9		
Don't know	4.5		
Other	3.9		

Procedures and measures

Medical personnel at the AMTUs identified individuals engaged in HIV care they believed would be appropriate for the study. Care providers approached potential participants during routine clinic visits to inquire about interest; potential participants were informed of the nature of the study, the information to be collected, and what assessments were involved in the study. All participants verbally assented to participation in the study. Participants under the age of 18 signed a written informed assent form; they also provided signed written informed consent from a parent or legal guardian. Participants provided their own written informed consent if they were 18 years of age or older. All AMTUs received approval to conduct this study through their respective Institutional Review Boards (IRBs).

After providing consent and assent, participants were placed in a private room and asked to complete self-report measures using an audio computer-assisted self-interviewing (ACASI) program. The measures included in this analysis were part of a larger battery of assessments.

Demographics

Participants responded to questions about their age, race, ethnicity, relationship status, and route of HIV infection (see Table 1).

Self-efficacy for reduction-behavioral skills

Self-efficacy for the reduction of sexual risk behavior was assessed with an 11-item scale developed by Kalichman et al.^{17,18} Participants were presented with four hypothetical scenarios in which there was a potential for unprotected sex: (1) meeting an attractive potential sexual partner while intoxicated who is open to sexual intercourse; (2) meeting an attractive casual acquaintance while seeking sexual intercourse because of feelings of loneliness; (3) unexpectedly running into a past sexual partner the participant knew before she was HIV positive (asked only to behaviorally infected participants); and (4) a sexual encounter with a long-term partner who voices a desire to have sex without a condom. The four scenarios varied in circumstances, affective states, and setting, and were designed to be personally relevant and realistic. For each scenario, participants were then asked to rate, on a 0–10 scale, how confident they are that they would be able to make three specific decisions in that scenario.

Decisions included telling a potential partner that they are HIV positive (self-efficacy to disclose one's status), bringing up the need to practice safer sex (self-efficacy to discuss safe sex), and refusing to have unsafe sex even if a potential partner pressures them to be unsafe (self-efficacy for refusing unsafe sex). One of the scenarios referenced a past sexual partner who knew the participant's status, and so a disclosure item was not included in that scenario, yielding 11 total items. Internal consistency for the full scale was measured at $\alpha=0.85$. The self-efficacy measure was broken into three separate subscales including the following: self-efficacy to disclose one's HIV status (three items), self-efficacy to discuss safe sex with one's partner (four items), and self-efficacy to refuse unsafe sex (four items). Internal consistency on these scales was measured at $\alpha=0.80$, $\alpha=0.76$, and $\alpha=0.88$, respectively.

Sexual Risk Assessment

The Sexual Risk Assessment was developed by the Secondary Prevention Working Group of the ATN. The sexual activity domain includes 38 questions that assess protected and unprotected oral, anal, and vaginal sexual activity with HIV-positive, HIV-negative, and HIV-status unknown male and female partners in the past three months. The current analysis focused exclusively on sexual encounters that female participants experienced with male partners. UVAI was examined as the percentage of vaginal or anal intercourse episodes in the past 3 months that had been unprotected, computed by dividing the number of vaginal and anal intercourse episodes involving UVAI in the 3 months prior to the study by the total number of episodes in that time period. Partner HIV status was assessed by creating a categorical variable that grouped participants into three categories describing the HIV status of their sex partners in the last 3 months: (1) only HIV-positive partners, (2) only HIV-negative/unknown status partners, and (3) both HIV-positive and HIV-negative/unknown status partners. The results of the Sexual Risk Assessment are presented in Table 2.

Analyses

Frequencies and descriptive statistics were obtained for all variables used in the analysis. Two separate ANOVAs were used to compare percentage of UVAI episodes and self-efficacy among the three partner HIV status categories referenced above. Multiple linear regression analysis was conducted to explore independent associations between self-efficacy and UVAI and partner HIV status and UVAI. Separate models were examined for the overall self-efficacy scale and the three subscales. Race, age, relationship status, HIV status of partner, and route of infection were used as covariates in each regression analysis. All analyses were conducted using SPSS 18.

TABLE 2. RESULTS OF SEXUAL RISK ASSESSMENT (N = 331)

Variable ^a	Range	Median	Mean	SD
Total male partners	0–30	1	1.17	2.20
HIV-positive male partners	0–3	0	0.19	0.43
Protected vaginal sex encounters	1–90	2	8.51	15.31
Unprotected vaginal sex encounters	0–100	1	11.38	24.45
Protected anal sex encounters	1–25	0	1.44	4.77
Unprotected anal sex encounters	0–90	0	2.24	10.73
HIV-negative/unknown male partners	0–30	1	1.26	2.04
Protected vaginal sex encounters	0–90	4	11.23	19.80
Unprotected vaginal sex encounters	0–100	0	5.98	15.22
Protected anal sex encounters	0–99	0	1.53	9.22
Unprotected anal sex encounters	0–600	0	2.57	22.53

^aAll variables reference the 3 months prior to baseline.

Results

Participants provided information on sexual activity and partner HIV status in the three months prior to assessment. Participants reported an average of 1.8 male sexual partners (SD = 2.32). One hundred ninety-eight (59.8%) participants reported only one sex partner, 67 (20.2%) reported two sexual partners, and 58 (17.5%) reported three or more sex partners. Participants had an average of 26.21 sexual episodes (SD = 52.13). On average, 30.9% of each participant's sexual episodes involved UVAI. One hundred fifty-three (46.2%) participants had no sexual episodes involving UVAI, and 40 participants (12.4%) reported that 100% of their sexual episodes involved UVAI.

Self-efficacy and UVAI

Results of the linear regression analyses are presented in Table 3. Overall mean self-efficacy for sexual risk reduction was associated with the percentage of UVAI episodes ($\beta = -4.62, p < 0.001; R^2 = 0.06$). Higher overall mean self-efficacy scores were associated with a lower percentage of UVAI episodes. This analysis included adjustments for age, race, and relationship status of participants, as well as the HIV status of the participants' partners. Two of the three subscales were also independently associated with the percentage of UVAI episodes, including higher mean self-efficacy to discuss safe sex with one's partner ($\beta = -4.31, p = 0.001; R^2 = 0.07$) and higher mean self-efficacy to refuse unsafe sex ($\beta = -3.81, p < 0.001; R^2 = 0.07$). Self-efficacy to disclose one's HIV status during a sexual situation was not independently related to the percentage of UVAI episodes.

Partner HIV status and UVAI

The majority ($N = 256; 79.3%$) of participants reported having only HIV-negative/unknown status partners, while 36 participants (11.2%) reported having only HIV-positive partners, and 31 participants (9.6%) reported having both HIV-negative/unknown and HIV-positive partners. As shown in Table 4, there appears to be a trend towards a significant relationship between percentage of UVAI episodes and the HIV status of sexual partners, $F(2, 319) = 2.80, p = 0.06$. This trend was driven by a difference between the group of participants that had only HIV-negative/unknown partners and the group that had HIV-negative/unknown and HIV-positive

TABLE 3. LINEAR REGRESSION MODELS WITH SELF-EFFICACY AND PARTNER HIV STATUS PREDICTING PERCENTAGE OF UVAI SEXUAL EPISODES IN THE LAST 3 MONTHS AMONG HIV-POSITIVE YOUNG WOMEN

Model ^a	β	SE	p
Overall self-efficacy	-4.63	1.27	<0.001
Sex with only HIV-positive partners	9.60	6.96	0.169
Self-efficacy subscales			
Disclose HIV status	-0.23	0.69	0.738
Discuss safer sex	-4.31	1.34	0.001
Refuse unprotected sex	-3.81	0.88	<0.001

^aEach model was adjusted for age, black race, and route of infection. Models including self-efficacy subscales were also adjusted for sex with only HIV-positive partners.

TABLE 4. HIV STATUS OF SEX PARTNERS, SELF-EFFICACY, AND PERCENTAGE OF SEXUAL EPISODES INVOLVING UVAI IN THE LAST 3 MONTHS AMONG HIV-POSITIVE YOUNG WOMEN ($N=323$)

HIV status of sex partners	n	%	Overall self-efficacy			% UVAI episodes		
			F-test	Mean	SD	F-test	Mean	SD
Only HIV + partners	36	11.2	$F_{(2, 288)} = 1.38$ $p = 0.256$	8.06	1.58	$F_{(2, 319)} = 2.80$ $p = 0.06$	38.7	37.5
Only HIV – partners	256	79.3		7.59	1.71		28.3	37.8
Both HIV + and HIV- partners	31	9.6		7.39	1.95		42.4	36.7

partners. Participants who only had HIV-negative/unknown partners had, on average, a lower percentage of UVAI episodes than girls and women who had both HIV-negative/unknown and HIV-positive partners (mean difference = 14.01, $p = 0.15$). Participants who had both HIV-negative/unknown and HIV-positive partners had the highest average percentage of UVAI episodes (42.4%), followed by participants who had only HIV-positive partners (38.7%). Participants who had only HIV-negative/unknown partners had the lowest average percentage of UVAI episodes (28.3%).

Self-efficacy and partner HIV status

A one-way ANOVA was conducted to compare the self-efficacy of girls and women with only HIV-negative/unknown partners, girls and women with only HIV-positive partners, and girls and women who had partners of both serostatuses. There was no significant difference, $F(2, 288) = 1.28$, $p = 0.256$.

Self-efficacy and number of sexual partners

A one-way analysis of variance was conducted to determine if girls and women with one sexual partner had different levels of overall self-efficacy for sexual risk reduction than girls and women with two or three or more sexual partners. A significant difference was found, $F(2, 296) = 4.37$, $p = 0.014$. The difference was driven primarily by the difference between the girls with one sexual partner and the girls with three or more sexual partners—on average, girls with one sexual partner had a mean overall self-efficacy score 0.76 points higher than girls with three or more partners. There were also differences with self-efficacy for disclosing one's HIV status, $F(2, 326) = 5.14$, $p = 0.006$, and self-efficacy for refusing unsafe sex, $F(2, 324) = 5.65$, $p = 0.004$. Girls with only one partner in the past 3 months had higher self-efficacy to disclose their HIV status in sexual situations than girls with two partners (mean difference = 1.21) and girls with three or more partners (mean difference = 1.10); girls with two partners were not significantly different from girls with three partners. In addition, girls with three or more partners had lower self-efficacy to refuse unsafe sex than girls with only one partner (mean difference = 1.15) and girls with two partners (mean difference = 1.22), but girls with two partners were not significantly different from girls with only one partner.

Number of partners and UVAI

A one-way ANOVA was conducted to determine if there was a relationship between percentage of intercourse episodes involving UVAI and number of partners in the past 3 months. There was no relationship, $F(2, 319) = 0.31$, $p = 0.732$.

Discussion

This study is one of the few to explore relationships among self-efficacy for sexual risk reduction, HIV status of recent sexual partners, number of recent sexual partners, and unprotected intercourse among HIV-positive adolescent girls and young women. In our sample, higher levels of self-efficacy were related to lower levels of UVAI. In addition, we found that in general, girls who had fewer partners had higher self-efficacy to disclose their own HIV status and refuse unsafe sex. However, in this sample there was no relationship between the number of partners and the percentage of UVAI episodes. There was also no relationship between self-efficacy and the serostatus of one's recent sex partners.

Self-efficacy for sexual risk reduction

Our results show that self-efficacy for sexual risk reduction is related to UVAI in the past 3 months among HIV-positive adolescent girls and women. More specifically, lower overall self-efficacy, lower self-efficacy to discuss safe sex with one's partner, and lower self-efficacy to refuse unsafe sex were related to increased percentages of UVAI. These findings are consistent with the literature, suggesting that confidence in one's own abilities to negotiate safe sex contributes to less unprotected sexual intercourse for adolescent girls and women. This study uniquely demonstrates that self-efficacy for individual skills of the negotiation of safe sex—specifically, discussing safe sex with one's potential partner and refusing unsafe sexual behavior—contributes to less unprotected sexual intercourse.

As noted previously, young women and girls in heterosexual sexual relationships often report having limited power within a sexual situation to negotiate condom use, as they are not the ones who control the use of the condom.⁸ Being able to negotiate a discussion about safe sex and refusing unsafe sex may be these young women's and girls' only way to press their partners into protected intercourse. Indeed, some sexual risk reduction programs targeted at adolescent girls and women have incorporated training on how to refuse unprotected sexual intercourse, and this training has been connected to an actual decrease in sexual intercourse for these girls.^{19,20}

Consequently, it follows that it is important for researchers and public health prevention practitioners to understand how safe sex negotiation operates within sexual situations, as well as the ways in which young women and girls increase their own efficacy and navigate difficult conversations with sexual partners about condom use and safe sex. Further research should focus more attention onto the negotiation of protected intercourse within sexual situations, especially in the context of gender power dynamics.

One potential area of investigation is relationship status and quality. Our investigation did not explicitly ask the nature of the relationship between the girls and their recent sexual partners, but there is some evidence in the literature to suggest that self-efficacy for sexual risk reduction varies depending on the nature of the romantic or sexual relationship with the sex partner. For example, studies have shown that HIV-positive adolescents are more likely to disclose their HIV serostatus to primary partners than to casual sex partners and that when adolescents do disclose, they do so in an attempt to deepen intimacy and generate support from their partners.^{21,22} Further research in this area should investigate how romantic relationships and intimacy interact with self-efficacy for sexual risk reduction in predicting condom use and safe sex discussion skills.

Although overall self-efficacy was negatively related to UVAI, self-efficacy to disclose one's HIV status did not show a significant relationship to UVAI. The lack of a relationship between disclosure self-efficacy and UVAI is supported by previous literature with men who have sex with men and may be due to a number of factors.³ Prior research shows up to 80% of HIV-positive youth do not disclose their status to recent sexual partners.^{21,23} Stigma surrounding HIV may prevent HIV-positive adolescents from feeling like they can disclose their HIV status in different situations.^{6,24} A 2002 study of HIV-positive African American women showed that women engage in a "calculus of disclosure" that involves balancing potential stigmatization with the benefit of social support, and that many women selectively disclose in some, but not all, situations.¹⁹ Given that our sample is predominantly African-American, this may be particularly important, as high levels of HIV-related stigma have been observed in communities of color, especially in rural areas.¹⁹ It is also possible that participants found it difficult to imagine disclosing their HIV status within the context of the situations presented to them in this study, since no personal details about the sexual partner were given in several of the situations. Qualitative research would be especially useful in exploring the nuances of this relationship.

These results also present evidence that self-efficacy for risk reduction is connected to the number of sexual partners reported by HIV-positive young women and girls. In our sample, HIV-positive young women and girls with fewer partners had higher overall self-efficacy, particularly self-efficacy for disclosing their HIV status and for refusing unsafe sex. This could be because girls and women with higher self-efficacy are also more knowledgeable about sexual health and behavior, and thus choose to have fewer partners as a protective strategy. This finding is particularly important; it demonstrates that although practicing behavior repeatedly is a necessary cause for increasing self-efficacy, it alone is not sufficient. There are many factors other than previous performance alone that contribute to perceived self-efficacy, including the ways in which one interprets previous experiences; social learning through vicarious experiences; verbal persuasion, such as health education; and emotional states.²⁵ This is important for intervention designers who wish to work with HIV-positive adolescent girls and women to note.

Furthermore, although HIV-positive young women with multiple partners are actually at greater risk for deleterious consequences of risky sexual behavior, they feel *less* equipped to navigate the negotiations necessary to practice safe sex

with their partners. Future research should explore the mechanisms of this relationship and investigate the causes of HIV-positive young women's diminished self-efficacy in safe sex negotiations despite seemingly having more situations in which to practice deploying these skills.

Overall, these results emphasize the necessity of investigating self-efficacy specific to certain tasks within the framework of reducing unprotected sexual intercourse. No literature currently exists that comprehensively investigates the sources of information that contribute to self-efficacy in HIV-positive adolescent girls and women. In order to better understand the multi-directional influence of self-efficacy and behavior, researchers should utilize longitudinal methods to investigate changes in perceived self-efficacy as it relates to recent sexual behavior, social support, psychological and physical states, and other relevant factors in HIV-positive women.

These results also provide potential foci for interventions aimed at reducing sexual risk behaviors in HIV-positive women. In a 2012 study, HIV-positive young women aged 17–24 years reported a desire for interventions with activities related to self-esteem, self-confidence, and empowerment.⁶ The authors noted that there was a need for interventions that address individual, social, and environmental issues and are "multidimensional, comprehensive, and tailored to their gender and age."⁶ An intervention focused on self-efficacy could easily incorporate these elements and include activities related to personal, environmental, and social factors through the techniques of observational learning and modeling, positive feedback, role-play, and biofeedback techniques.

Partner HIV status

Partner HIV status was not significantly related to the percentage of UVAI in this sample, although there was a trend for participants who had both types of partners to have a higher percentage of UVAI episodes compared to participants who only had HIV-negative or HIV-positive partners. Some previous research suggests that HIV-positive adolescents are less likely to use a condom when they knew or perceived that their sex partner was also HIV-positive.²⁶ Partner HIV status and condom use among young women and adolescents may display patterns different from those among MSM, as MSM are not concerned about unintended pregnancy during same-sex encounters. Notably, studies show that reducing pregnancy risk through contraceptive methods other than condoms may decrease condom use.^{3,27,28} These findings point to the need for research tailored to the unique concerns of HIV-positive women of child-bearing age.

Limitations and future research

Overall, our study faced several limitations. As noted, the cross-sectional survey design did not provide the ability to establish temporal direction of the relationships observed. Our measure of self-efficacy asked participants to envision themselves in hypothetical situations, but these situations did not identify the HIV serostatus of the partner propositioning the participant for sexual intercourse in any of the situations. The HIV status of the proposed partner in these scenarios could possibly affect girls' and women's self-efficacy to negotiate safe sex within these situations.

In addition, our participants were all engaged in HIV care; our results may not be generalizable to HIV-positive girls and women who are not currently seeking treatment for their HIV. One way in which this limitation may be significant is the impact upon the coping mechanisms and self-efficacy of the participants involved in the study. Women and girls who have taken action to seek out medical care for HIV might have an overall higher motivation and self-efficacy for self-care, greater socioeconomic resources, and a larger social network on which to rely for support than women and girls who are not in care for HIV. All of these factors could potentially lead to higher self-efficacy for sexual risk reduction.

Future efforts should take into consideration these limitations and continue to test the role of cognitive processes, such as self-efficacy, and behavioral processes on overall sexual risk reduction for HIV-positive girls and young women. Additional characteristics of sexual partners beyond HIV status—including sexual partners' age, race, and the nature of the relationship with the partner—may add a new dimension to the understanding of sexual risk behaviors in young girls and women. Additional qualitative data is necessary for contextualizing the quantitative findings obtained here and to provide more comprehensive information on the relationship between partner characteristics, sexually related social cognition, and sexual risk behaviors among HIV-positive adolescent girls and women. Certainly, more work needs to be devoted to examining risk behaviors and relationships among HIV-positive young women and girls, particularly to investigate whether their HIV-positive status confers unique advantages or disadvantages within sexual situations and relationships. While there is no single factor that can account for all behavior change, researchers must continue to pinpoint cognitive, environmental, and behavioral factors that have the potential to be addressed through interventions. This analysis provides further evidence that self-efficacy may be of key importance in future research.

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