

Condom-Use Patterns among Women Who Live in Public Housing Developments in Ponce, Puerto Rico

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Abstract: **Background.** Understanding condom-use patterns and the reasons that women have for choosing not to use condoms with their sexual partners, (both steady and non-steady), is important to the development and implementation of targeted, culturally appropriate interventions that can promote condom use in low-income and impoverished women. **Methods.** A total of 386 women from four public housing developments in Ponce, Puerto Rico, underwent HIV/STI testing and completed a self-administered questionnaire. Data were collected from August 2008 to October 2010. **Results.** Reported levels of condom use were low with both steady and non-steady sexual partners. Reasons given for not using condoms with both partner types included the respondent claiming to know her partner well, a general dislike for condoms, not having condoms available, and perceiving no need for them. **Conclusions.** These findings provide a foundation on which to build an intervention to promote condom use among impoverished women who live in public housing in Puerto Rico in addition to other disadvantaged or impoverished women. It is imperative that health practitioners consider the reasons that these women have for not using condoms in order to inform the development and implementation of effective HIV-prevention interventions.

Key words: Low-income women, impoverished women, Puerto Rico, condom use, Latina.

The prevalence of HIV among adults in the Caribbean is estimated to be approximately one percent (95% Confidence Interval [CI] = 0.9%–1.1%), which is higher than in all of the other regions of the world with the exception of sub-Saharan Africa.¹ Unprotected sex between men and women—especially paid sex—is believed to be the main mode of HIV transmission in this region. The Caribbean remains the only region outside sub-Saharan Africa where women and girls outnumber men and boys among people living with HIV.¹ In 2009, an estimated 53% of people with HIV in the Caribbean were female.¹

HIV risks are exacerbated for women by a number of social and cultural factors. One of the primary phenomena that contributes to increased risk for women and girls has to do with gender socialization. *Gender* refers to the widely shared expectations and norms held by a society with regard to appropriate male and female behavior, characteristics,

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and roles. It is a social and cultural construct that differentiates women from men and defines the ways in which women and men interact with each other.² With respect to women's vulnerability, in many societies, there is a culture of silence surrounding sex that dictates that "good" women are expected to be ignorant about sex and passive in sexual interactions, making it difficult for women to be informed about risk reduction or, even when informed, making it difficult for them to be proactive in negotiating safer sex.² The women in our study sample are members of just such a society.

A related trait of many societies, including Caribbean societies, is the belief that variety in sexual partners is essential to men's nature as men and that men will seek multiple partners for sexual release; the manifestations of traditional notions of masculinity are strongly associated with a wide range of risk-taking behaviors, among both men and women.³

One socioeconomic phenomenon that contributes to the increased risk of HIV for women is poverty. Many experts believe poverty, unemployment, and a lack of education are helping to drive the growing HIV problem among women. Women living in inner-city poor neighborhoods are often in poor health and without access to health care for prevention or treatment.⁴

While risky behaviors in these communities directly spread HIV, urban poverty is clearly also playing an important role, albeit a somewhat indirect one. Previous research has examined the relationship between socioeconomic status and HIV risk and has identified significant associations between the two, such as the fact that people who are considered low-income are more likely to be HIV positive than are their higher income peers.⁵⁻⁷ The findings from these studies suggest that impoverished people are at increased risk for HIV infection because of the heightened risk that stems from the increased HIV prevalence within their social/sexual networks. Furthermore, the physical, psychological, and social circumstances in which their poverty places them may also increase their risk of HIV exposure.

Given the patterns and inequalities in the roles of women and men, it is not surprising that women are at high risk for HIV transmission, especially those who live in societies that are impoverished and male-dominated, characterized strongly by gender inequality. The focus on gender relations means that it is important to understand the cultural and social norms that shape behavior. Therefore, research into HIV-prevention efforts must explore the mechanisms by which various social and cultural constructs increase women's vulnerability to HIV. By developing an understanding of these constructions, one can begin to develop and implement appropriate and effective strategies to improve women's situations.

Previous HIV research with low-income and impoverished women. Even in light of the increased vulnerability of women and low-income people, few rigorous HIV-related investigations have been implemented that specifically target low-income-housed women. One large-scale population-based study employing a one-stage probability cluster sample targeted young women (ages 18 to 29 years) residing in various counties in Northern California where the median household income was below the 10th percentile, as determined by census data.⁸ This was the first population-based study to assess behavior risk and STD prevalence among women living in low-income areas. Face-to-face structured interviews were administered to 2,543 randomly selected

women. Results revealed that these women displayed high levels of a variety of sexual risk behaviors (including low levels of condom use, having multiple sex partners, having high-risk sex partners) and significant levels of intimate partner violence (IPV), had an increased incidence of STDs, and tended to be substance abusers (specifically referring to non-injecting use).

A study of homeless and low-income-housed women was conducted in Southern California.⁹ Women, ages 18 to 55 years, residing in Section 8, private, project-based HUD-subsidized apartments were randomly selected, with buildings serving as sampling strata. A total of 438 low-income housed women were interviewed. The study results were similar to those found in the Northern California study, with the women interviewed evidencing high levels of risky sexual behaviors, substance abuse, and IPV. A large-scale study of low-income, housed women in 18 low-income inner-city housing developments in five geographically diverse U.S. cities was conducted, and formative data were gathered to inform the development and implementation of a randomized community-level HIV intervention.¹⁰ Baseline data revealed that these women were engaging in sexual and drug-using behaviors that were increasing their risk of HIV transmission. Other studies of small, non-random samples of low-income, housed women have similar results.¹¹⁻¹² It is important to note that a number of HIV-related studies were identified that reported including low-income women; however, this variable was not measured and used as a criterion for any of the studies but merely was a general description based on unscientific observation. For example, inner-city drug users or women outside health- and social-services offices that are often utilized by low-income women were sampled and subsequently described as being low-income.¹³⁻¹⁷ However, irrespective of the less-than-rigorous research design, these studies found results similar to those that were found in the large-scale, more rigorous studies. Surveillance and research data indicate that HIV/AIDS is disproportionately high among minority women and the members of lower socioeconomic groups both in the developed and in the developing world.¹⁸⁻²¹

Previous research among women examining reasons for not using condoms.

While there has been much published on the levels and the predictors of condom use among women elsewhere, very few research studies among women have measured the reasons for not using condoms. One study of heterosexual African American women found through focus groups that approximately one third of the participants stated that a barrier to their practicing safe sex was their belief that there was no risk based on their being in a monogamous relationship and feeling no need to use protection.²² Other reasons given were lack of concern, being unprepared, partner's refusal to use a condom, and lack of money to buy condoms. Another study examined reasons for not using condoms among army women,²³ and found that the reasons included having the same partner, using other contraceptives, irritation or inflammation, breaking of the condoms during use, slippage during use, and ruining the moment.

A recently published article that presented the results of a qualitative study that examined barriers to using condoms among women who live in public housing in Ponce, Puerto Rico.²⁴ These women noted feeling a lack of control over partner's behavior, fear of physical violence, partner's refusal to use a condom, and lack of negotiation skills. These data were collected through focus groups; the questions used to elicit the data

were asked in a fairly general way (such as “What are the barriers to using condoms that you encounter in your sexual relationships?”).

Incidence and prevalence of AIDS and HIV among women living in Puerto Rico. As the HIV/AIDS epidemic enters its fourth decade, it continues to pose a major public health problem, in few places more so than in Puerto Rico. As of July 2010, 34,313 cases of AIDS were reported in Puerto Rico, and approximately 30% of new cases were diagnosed among women.²⁵ Heterosexual transmission accounts for 61% of the cases among women, followed by injecting drug use (IDU).²⁵ Cumulative reported cases diagnosed among women constitute 23% of the total cases. Puerto Rico has one of the highest incidence rates of AIDS in the Americas.²⁶

In 2009, rates of HIV diagnoses among female adults and adolescents (ages 13 years and older) in Puerto Rico ranked 5th among 40 states and five U.S. territories, with a rate of 15.4 cases per 100,000 population.²⁷ Rates of adult and adolescent females living with a diagnosis of HIV infection, at year-end in 2008, revealed that Puerto Rico ranked 3rd, with 349.7 cases per 100,000 population.²⁷ Lastly, in terms of rates of AIDS diagnoses among adult and adolescent females in 2009, Puerto Rico ranked 5th, with a rate of 13.2 cases per 100,000 population.²⁷

Using these results and the population of Puerto Rico, which is approximately 3.8 million, with females being 1,975,033 of that total,²⁸ HIV prevalence was calculated for women and girls living in Puerto Rico. The population of females ranging in age from 13 years and older was 1,591,206.²⁸ At the end of 2008, the estimated prevalence among women and girls ages 13 years and older living in Puerto Rico was 0.35%. While this prevalence rate may seem to be low, data collected from 1,138 women during the formative phase of *Proyecto MUCHAS* revealed a rate almost nine times that estimate, with a 3% self-reported HIV-positive rate.²⁹ This rate does not include those women who refused to disclose their status on the survey. If we include them, the rate goes up to almost 11 times the estimated prevalence, or 3.9%.²⁹ As the percentage of AIDS cases among women continues to increase in Puerto Rico, it becomes imperative that research and prevention efforts target additional groups of women who may be at increased risk of HIV.

Social and cultural factors exacerbating HIV risk among impoverished women in Puerto Rico. Research with impoverished, minority women in the U.S. suggests that this population is at a significant risk of HIV due to increased levels of drug use, risky sexual practices, and intimate partner violence, among other factors; in addition, there may be significant levels of interaction with members of concentrated groups.³⁰⁻³³ While previous research findings can be used to hypothesize increased HIV risk, data on impoverished Latinas in Puerto Rico are scarce, so it is difficult to estimate either the levels of HIV risk or the factors contributing to such risk for this population. Unique cultural and social factors exist that may significantly exacerbate HIV/STI risk for impoverished Latina women living in public housing developments in Puerto Rico.

As is frequently the case in Latino societies, children born into the Puerto Rican culture find themselves subject to attitudes, mores, and customs that promote very strong gender differences. From birth on, these differences pervade sexual expression and male-female interaction.³⁴ The outward manifestation of the principle illustrated by these differences in Latino societies is called *machismo*, which is the belief that males

are physically, intellectually, culturally, and sexually superior to females.³⁴ Because of this pervasive attitude, women can be relegated to the role of being sexual objects with the sole aim of fulfilling men's desires and needs.³⁵ In Puerto Rico, such ideas are more prevalent among members of the low-income population, who tend to agree with the more traditional values as related to gender.³⁶ These factors must be considered if one is to develop culturally appropriate, effective interventions to decrease HIV/STI risk-related behaviors among these women. Considering these additional cultural and social factors present in Puerto Rico, impoverished Latinas in Puerto Rico may be at a significantly higher risk for HIV than are their U.S. peers.

The findings from the various, but limited, U.S.-based studies indicate that low-income and impoverished women are in need of HIV-prevention skills. However, in Puerto Rico, this population has largely been ignored. Only one study that specifically targeted women residing in low-income public housing projects in Puerto Rico was identified. An AIDS outreach demonstration and education program for drug-using women, sex workers, and female sex partners of IDUs was implemented in San Juan almost 20 years ago.³⁷ Previous and current HIV research efforts have primarily targeted IDU (primarily men) in and around San Juan and Bayamón. A review of publications focusing on HIV/STD prevention in Puerto Ricans revealed no studies targeting women outside of San Juan and Bayamón.³⁸

While heterosexual risk among Puerto Rican women was the focus of a number of studies, the vast majority of the samples was drawn from U.S. locations (specifically, New York City). In light of the previous information presented, it is imperative that HIV research target these at-risk women living in Puerto Rico. Furthermore, over 17% (approximately 5,300 cases) of Puerto Rico's total reported AIDS cases are in Ponce (located in the southern region of the island).²⁵ Yet, HIV-related behavioral research and appropriate behavioral interventions have been non-existent in this, the second-largest city in Puerto Rico. Ponce is distinct from San Juan and Bayamón in that it is not a major metropolitan area and is located on the opposite side of the island from the other two; nevertheless, it is in need of HIV-prevention research and interventions, as indicated by the large percentage of overall reported AIDS cases from the city.

As discussed above, there is little or no behavioral research targeting heterosexual, non-injecting drug-using impoverished women residing outside of the San Juan metropolitan area, nor is this population being served by any form of behavioral intervention. It is critical that these matters be addressed.

How this research addresses a gap in the literature. Although three decades of biomedical and behavioral research have established the causes of HIV and AIDS as well as viable modes of transmission, there is still no cure or vaccine for HIV. Therefore, it is imperative to focus on behavior modification as a way to combat the spread of the disease, especially since the epidemic is rooted in the behaviors that transmit the virus. It is common knowledge within the field of HIV/AIDS prevention that condom use is one of the most effective behaviors in preventing HIV transmission. In order to develop appropriate interventions, it is imperative that the factors associated with condom use or non-condom use be identified. Previous research with various samples has successfully identified a number of factors associated with condom use. However, very few studies have examined personal reasons for not using condoms with sex partners.

In addition, no studies were identified that examined reasons for not using condoms by different partner types among low-income, disadvantaged, and impoverished women. This is an especially important area of research considering the many differences in the dynamics of the relationships that could affect the likelihood of using or the ability to use condoms.³⁹

As stated earlier, in Puerto Rico, the impoverished population has been largely ignored. With the knowledge gained from our previous qualitative research in Ponce, for the present study, we administered a quantitative instrument that asked specifically about condom use patterns and solicited the participants' reasons for not using condoms, among a sample of impoverished women who lived in public housing in Ponce, Puerto Rico.

The better understanding of high-risk behaviors among disadvantaged women (especially with regard to their not using condoms) that is provided by this study, can, we hope, be applied to the implementation of HIV-prevention interventions in other male-dominated cultures. It is especially important that the current study is examining the prevalence of women's reasons for not using condoms, and with which type of partners. This contribution is critical because it relates to health-literacy interventions, which involve understanding the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.⁴⁰

Methods

Data collection. Data for these analyses were taken from the Proyecto MUCHAS (www.psm.edu/research/MUCHAS), an HIV testing project targeting women living in public housing in Ponce, Puerto Rico. A baseline questionnaire related to HIV/AIDS education and prevention was developed. Our survey instrument included items addressing sexual history, attitudes toward condoms and safer sex, sexual behaviors by steady and non-steady sex partners, and drug and alcohol use.

Women completed the assessments in the community center room within each housing development. Informed consent was received from every respondent. Due to the nature of the questions and the possible perceived threat of addressing issues of a sexual nature, the instrument was self-administered with no identifiers, providing confidentiality to the respondents. Each woman received \$20 as compensation for completing the survey. All surveys were administered in Spanish. This survey was administered in conjunction with HIV/STI testing.

Eligibility criteria included being female and a resident of the public housing development (PHD). A non-probability sampling approach was employed for the study. Once a public housing development was selected, posters were put up announcing that the project would be coming to the public housing development on a certain date and inviting all women to come to the community center and participate in the study. All eligible women were invited to participate. Data were gathered from August 2008 to October 2010 from 386 women in four different public housing developments across the city of Ponce. Since it was a self-selected non-representative sample, we are unable to report any demographic characteristics for the women who refused to participate in

the study, nor can we speak to how representative these findings are to other women living in PHDs as well as to women living in PHDs in other regions of Puerto Rico. Our survey and the study procedures were reviewed and approved by the Institutional Review Board of the Ponce School of Medicine.

Variables of interest. *Dependent variables.* Condom use at last sex with most recent sex partner (both their steady and/or non-steady partners). Women were asked whether they had used condoms with their last most recent steady and/or non-steady sex partners. Responses were categorized as *yes* or *no*.

Reasons for not using condoms during last sexual encounter with most recent sex partner (both their steady and/or non-steady partners). Women were asked to select from the following list the reason(s) for not using condoms during their last sexual encounters with their most recent steady and/or non-steady sex partners: Not available; Too expensive; Partner objected; Don't like them; Used other methods of contraceptives; Don't need them; Didn't think about it; Know partner well; and, Other. Each response was coded as either *selecting this particular reason* (1) or *not selecting this particular reason* (0). Women were allowed to select multiple responses.

Independent variables. A number of variables were used in the analyses. Some variables were recoded to facilitate the multivariate logistic regression analyses. The following operationalizations were used:

Age. Age was trichotomized into the following categories: *youth (aged under 25 years)*, *middle-aged adults (aged 25–49 years)*, and *older adults (aged 50 years and older)*.

Education. Education was dichotomized into the following categories: *those with less than a high school education* and *those with at least a high school education*.

Relationship status. Women were asked to report marital status by selecting one of the following four response options: *legally married*, *common-law partner*, *single*, or, *separated*, *divorced*, or *widowed*. The responses were then dichotomized into the following categories: *spouse* (which included *legally married* and *common-law partner*) and *non-spouse* (which included *single*, *separated*, *divorced*, and *widowed*).

Exposure to intimate partner violence. A new variable was computed, one that summed up the responses to the following questions: *Have you ever had sexual relations with an aggressor?*; *Have you ever been threatened physically for asking for safer sex?*; *Have you ever been forced to have sexual relations?*; and, *Have you ever experienced verbal, emotional, and/or psychological abuse by a partner?* Women who reported having experienced any of these types of violence were coded as one, with the remaining women being coded as zero. The values of the four questions were summed, resulting in a range of scores from zero to four. This variable was dichotomized into the following categories: *those who were not exposed to any types of violence* and *those who were exposed to at least one of the four types of violence* listed above.

History of alcohol use. Women were asked whether they had ever consumed alcohol in their lifetimes; the response categories were *yes* and *no*.

History of illicit drug use. A new variable was computed based on the women's reported history of using at least one of five different illicit drugs (crack-cocaine, cocaine, heroin, speedball [heroin and cocaine mixed], and amphetamines). Those who reported a history of use for any of the five illicit drugs listed above were coded as one while the remaining women were coded as zero. The values were summed, generating a range

of scores going from zero to five. This variable was dichotomized into the following categories: *those who reported no history of using any of the above listed illicit drugs* and *those who reported a history of using at least one of the drugs listed above*.

Frequency of discussing safer sex with most recent sex partner (both their steady and/or non-steady partner). Women were asked how frequently they had talked about safe sex with their most recent steady and/or non-steady sex partners and were given six responses from which to choose: *one or two times, a few times, regularly, never talked about it, haven't talked about it but plan to, and never thought about talking about it*. This variable was recoded into two groups: *yes, have discussed safer sex to some extent* and *no, haven't discussed safer sex with this partner*.

Anal intercourse with most recent sex partner (both their steady and/or non-steady partner). Women were asked whether they had engaged in anal intercourse with their most recent steady and/or non-steady sex partners. The response categories were *yes* and *no*.

Type of sexual partner reported. This variable was created based on the responses given to the questions for each partner type and resulted in three categories: *non-steady sex partner only, steady sex partner only, and, both steady and non-steady sex partners*.

Type of sexual partner by relationship status. A new variable was created by combining the type of sexual partner reported by relationship status, and five categories emerged: *Spouse, steady sex partner only; Spouse, steady and non-steady sex partner; Non-spouse, steady sex partner only; Non-spouse, non-steady sex partner only; and Non-spouse, both steady and non-steady sex partner*.

Data Analysis. Both bivariate (chi-squared) and multivariate (logistic regression) analyses were employed. Chi-squared analyses were used to examine the differences in proportions between those who used condoms at last sex and those who did not use condoms during their last sexual encounter by partner type. In addition, in order to understand the relationship among all the model variables with respect to the dependent variables of interest, all model variables were dichotomized or trichotomized to facilitate the logistic regression analyses. Variables that were selected for the regression analyses were based on previous empirical research and were, as well, theoretically related to condom use.

Results

Sample characteristics. Table 1 displays the sample characteristics, including socio-demographic variables as well as behavioral variables. A total of 317 women reported having had a sex partner in the previous 12 months, representing 82.1% of the total sample. The age of the majority of women ranged from 25 to 49 years (56.5%), followed by approximately one-quarter reporting being under the age of 25 years (24.9%). The majority had a least a high school education (57.8%). Slightly more than one half reported being married or involved in a common-law relationship (54.9%).

The majority of women reported a history of alcohol use (63.5%) while only a small proportion reported a history of illicit drug use (8.5%). The majority of women reported having discussed safer sex with their most recent steady sex partners as well as their most recent non-steady sex partners (74.8% and 65.5%, respectively). Slightly more than

Table 1.**SOCIODEMOGRAPHIC CHARACTERISTICS FOR SUB-SAMPLE OF WOMEN WHO REPORTED HAVING HAD A SEX PARTNER IN THE PREVIOUS 12 MONTHS (N=317)**

| Characteristic | Number | Valid Percentage | Response Rate (%) |
|--|--------|------------------|-------------------|
| Age (years) | | | 98.7 |
| <25 | 78 | 24.9 | |
| 25-49 | 177 | 56.5 | |
| 50+ | 58 | 18.5 | |
| Education | | | 98.7 |
| Less than a high school education | 132 | 42.2 | |
| High school | 117 | 37.4 | |
| More than a high school education | 64 | 20.4 | |
| Relationship Status | | | 100.0 |
| Legally married | 45 | 14.2 | |
| Common-law | 129 | 40.7 | |
| Single | 98 | 30.9 | |
| Divorced, Separated, or Widowed | 45 | 14.2 | |
| Exposure to Intimate Partner Violence | | | |
| Sexual relations with an aggressor | 39 | 12.4 | 95.6 |
| Threatened physically for asking for safer sex | 8 | 7.2 | 58.3 |
| Forced to have sexual relations | 18 | 15.9 | 59.6 |
| Verbal, emotional, and/or psychological abuse by partner | 24 | 21.4 | 34.4 |
| History of Alcohol Use | | | 98.2 |
| Yes | 198 | 63.5 | |
| No | 114 | 36.5 | |
| History of Illicit Drug Use | | | 98.7 |
| Yes | 27 | 8.5 | |
| No | 286 | 91.4 | |
| Condom Use at Last Sex with Most Recent Steady Sex Partner | | | 100.0 |
| Yes | 36 | 11.6 | |
| No | 275 | 88.4 | |
| Condom Use at Last Sex with Most Recent Non-steady Sex Partner | | | 100.0 |
| Yes | 36 | 25.0 | |
| No | 108 | 75.0 | |

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Table 1. (continued)

| Characteristic | Number | Valid Percentage | Response Rate (%) |
|---|--------|------------------|-------------------|
| Frequency of Safer Sex Discussions with Most Recent Steady Sex Partner | | | 95.5 |
| One or two times | 26 | 8.8 | |
| A few times | 97 | 32.7 | |
| Regularly | 99 | 33.3 | |
| Never talked about it | 30 | 10.1 | |
| Haven't talked about it but plan to | 21 | 7.1 | |
| Never thought about it | 24 | 8.1 | |
| Frequency of Safer Sex Discussions with Most Recent Non-steady Partner | | | 96.5 |
| One or two times | 14 | 10.1 | |
| A few times | 35 | 25.2 | |
| Regularly | 42 | 30.2 | |
| Never talked about it | 16 | 11.5 | |
| Haven't talked about it but plan to | 12 | 8.6 | |
| Never thought about it | 20 | 14.4 | |
| Engaged in Anal Intercourse in the Previous 12 Months with Most Recent Steady Sex Partner | | | 74.9 |
| Yes | 86 | 36.9 | |
| No | 147 | 63.1 | |
| Engaged in Anal Intercourse in the Previous 12 Months with Most Recent Non-steady Sex Partner | | | 74.3 |
| Yes | 32 | 29.9 | |
| No | 75 | 70.1 | |
| Type of Sexual Partners Reported | | | 100.0 |
| Steady partner only | 173 | 54.6 | |
| Non-steady partner only | 6 | 1.9 | |
| Both steady and non-steady partners | 138 | 43.5 | |

one third (36.9%) reported having engaged in anal intercourse with their most recent steady sex partners while a smaller percentage reported having engaged in this activity with their most recent non-steady partners (29.9%). The majority of women reported having had only a steady sex partner in the previous 12 months (54.6%), followed by a smaller percentage reporting having had both a steady and a non-steady sex partner during the same time (43.5%). Only a very small percentage of women reported having had only a non-steady sex partner during the previous 12 months (1.9%).

Condom use with most recent steady sex partner compared with condom use with most recent non-steady sex partner. Chi-squared analysis was used to examine the differences in reported levels of condom use by partner type. There was a statistically

significant difference between levels of reported condom use at last sex with most recent steady sex partner and condom use at last sex with most recent non-steady sex partner. Among the women who provided data regarding condom use at last sex with their most recent steady partner ($n=311$ or 98.1% of the total sample), only 11.3% reported using a condom at last sex with this partner. Among the women who provided data regarding condom use at last sex with their most recent non-steady partner ($n=144$ or 45.4% of total sample), 22.2% reported using a condom with this partner, indicating a higher level of reported condom use with their most recent non-steady sex partner ($\chi^2(1)=9, p=.002$).

Condom use with most recent steady sex partner. Table 2 presents the results of reported condom use with most recent steady sex partner by relationship status and partner type. The total sample of women who reported having had a sex partner numbered 311 (98.1% of all women who reported having had a sex partner in the previous year). As is indicated in the table, the vast majority of women reported no condom use at last sex with this partner. A smaller percentage of women who had only a spouse and a steady sex partner reported lower levels of condom use than did the other three groups of women (5.9% vs. 15.2%, 14.1%, and 12.5%, respectively). The reasons for not using a condom were provided by 293 women who reported having had a steady sex partner in the previous 12 months (94.2% response rate); these reasons are also examined by relationship status and partner type. Women who had a spouse and had only a steady sex partner in the previous 12 months were more likely than all other groups of women to report that knowing their partner well was their reason for not using condoms (62.9% vs. 48.3%, 48.4%, 35.7%, respectively). No other statistically significant differences emerged with respect to the reasons for not using a condom at last sex with their most recent steady sex partners.

A significant percentage of women in the various categorizations by relationship status and partner type (ranging from 16.7% to 22.9%) reported a dislike for condoms as a reason for non-use. The percentage of women in the various partner type categories gave the reason of not thinking about not using a condom ranged from 6.2% to 13.3%. Lastly, the percentage of women categorized by partner/relationship cited the reason for not using a condom at last sex as no perceived need for them ranged from 3.3% to 14.4%.

Condom use with most recent non-steady sex partner. Table 3 presents the results of reported condom use with most recent non-steady sex partner by relationship status and partner type. The total sample of women who reported having a non-steady sex partner in the last 12 months numbered 144 (45.4% of all women who reported having had a sex partner in the previous year). Of these 144 women who reported having a non-steady sex partner, 142 (98.6%) women who reported having had a non-steady sex partner in the previous 12 months provided at least one reason for not using condoms at last sex with this partner (98.6% response rate). As is indicated in the table, the vast majority of women reported no condom use at last sex with this partner. However, women who reported having had a non-spouse together with both partner types were more likely to report condom use at last sex with this partner (that is, the non-spouse) than were the other two groups (27.3% vs. 16.7% and 18.1%, respectively). A total of 142 women who reported having had a non-steady sex partner in the previ-

Table 2.

REPORTED PATTERNS OF CONDOM USE WITH MOST RECENT STEADY SEX PARTNER BY RELATIONSHIP STATUS AND PARTNER TYPE (N=311)

| Variable | Non-spouse, Both Steady and Non-steady Sex Partners | Non-spouse, Steady Partner Only | Spouse, Both Steady and Non-steady Partners | Spouse, Steady Sex Partner Only | χ^2 (p-value) |
|---|---|---------------------------------|---|---------------------------------|--------------------|
| Condom Use During Last Sexual Encounter | | | | | 4.63 (p=0.201) |
| Yes | 10 (15.2%) | 10 (14.1%) | 9 (12.5%) | 6 (5.9%) | |
| No | 56 (84.8%) | 61 (85.9%) | 63 (87.5%) | 96 (94.1%) | |
| Reasons For Not Using Condoms During Last Sexual Encounter ^a | | | | | |
| Not available | 11 (18.3%) | 9 (14.1%) | 5 (7.1%) | 7 (7.2%) | 6.39 (p=0.094) |
| Too expensive | 0 (0.0%) | 2 (3.1%) | 1 (1.4%) | 0 (0.0%) | 4.50 (p=0.213) |
| Partner objected | 1 (1.7%) | 2 (3.1%) | 3 (4.3%) | 2 (2.1%) | 1.09 (p=0.780) |
| Don't like them | 10 (16.7%) | 14 (21.9%) | 16 (22.9%) | 19 (19.6%) | 0.90 (p=0.825) |
| Used other methods of contraception | 4 (6.7%) | 1 (1.6%) | 3 (4.3%) | 5 (5.2%) | 2.06 (p=0.560) |
| Don't need them | 2 (3.3%) | 7 (10.9%) | 10 (14.3%) | 14 (14.4%) | 5.36 (p=0.147) |
| Didn't think about it | 8 (13.3%) | 6 (9.4%) | 7 (10.0%) | 6 (6.2%) | 2.32 (p=0.509) |
| Know partner well | 29 (48.3%) | 31 (48.4%) | 25 (35.7%) | 61 (62.9%) | 12.28 (p=0.006) |

^aThese are among those who reported no condom use during last sexual encounter and actually provided a reason for not using (n=293 or 94.2% response rate) and are not mutually exclusive groups.

ous 12 months provided at least one reason for not using condoms at last sex with this partner (98.6% response rate).

There were two statistically significant differences among the three groups of women with respect to reasons for not using a condom. None of the women who were non-spouses who reported having had only a non-steady sex partner reported knowing their partner well as the reason (for not using a condom), compared with 17.7% of women with a spouse and both steady and non-steady partners and 37.5% of women who were non-spouses who reported having had both a steady and non-steady partner (37.5%). However, women who were non-spouses who reported having had only a non-steady sex partner were more likely to report that their partners objected (20%) when compared with the women in the other two groups (1.8% and 1.6%, respectively). Women who were non-spouses with only a non-steady partner were less likely to report the lack of availability than were the women in the other two groups (0.0% vs. 17.7% and 23.2%, respectively). Significant percentages cited a dislike for condoms as their reason for not using them (ranging from 14.3% to 40.0%) as well as not thinking about it (ranging from 8.9% to 20.0%).

Bivariate analyses results. Table 4 displays the bivariate results of the selected covariates and the dependent variable of condom use at last sex with their most recent steady sex partners. As is shown in the table, older women reported a higher usage of condoms (20.4%) than middle-aged women (6.3%) and youth (14.3%). While no other statistically significant differences emerged, some notable differences are presented. A larger percentage of women who had less than a high school education reported not using a condom than did their more educated peers (14.0% vs. 7.8%). Additionally, a smaller percentage number of women who had a spouse and who reported having had a steady sex partner reported only lower levels of condom use compared with those in the other groups (5.9% vs. 15.2%, 14.1%, and 12.5%, respectively). Finally, those who reported having had discussions with this partner about safer sex reported higher levels of condom use than did those women who reported not having had such discussions (12.8% vs. 7.8%).

Table 5 displays the bivariate results of the selected covariates and the dependent variable of condom use at last sex with their most recent non-steady sex partners. Three marginally significant relationships emerged between condom use and the covariates. Those women who had a least a high school education reported higher levels of condom use with this partner than did their less educated peers (27.7% vs. 15.0%). Furthermore, women who reported being exposed to intimate partner violence were more likely to report condom use with this partner than were women who reported no such exposure (31.6% vs. 18.3%). Those women who reported engaging in anal intercourse with this partner were less likely to report condom use than were women who did not engage in this sexual activity (9.7% vs. 26.0%). While not statistically significant, women who were non-spouses who had both a steady and a non-steady partner reported higher levels of condom use when compared with the women in the other groups (27.3% vs. 16.7% and 18.1%, respectively). Finally, those who reported having had discussions about safer sex with this partner reported higher levels of condom use than those who had not had such discussions (26.7% vs. 14.6%).

Multivariate analyses results. Table 6 presents the multivariate logistic regression

Table 3.

REPORTED PATTERNS OF CONDOM USE WITH MOST RECENT NON-STEADY SEX PARTNER BY RELATIONSHIP STATUS AND PARTNER TYPE (N=144)

| Variable | Non-spouse, Both Steady and Non-steady Sex Partners | Non-spouse, Non-steady Partner Only | Spouse, Both Steady and Non-steady Partners | χ^2 (p-value) |
|---|---|-------------------------------------|---|--------------------|
| Condom Use During Last Sexual Encounter | | | | 1.80 (p=0.406) |
| Yes | 18 (27.3%) | 1 (16.7%) | 13 (81.9%) | |
| No | 48 (72.7%) | 5 (83.3) | 59 (18.1%) | |
| Reasons For Not Using Condoms During Last Sexual Encounter ^a | | | | |
| Not available | 13 (23.2%) | 0 (0.0%) | 11 (17.7) | 1.83 (p=0.402) |
| Too expensive | 0 (0.0%) | 0 (0.0%) | 1 (1.6%) | .99 (p=0.609) |
| Partner objected | 1 (1.8%) | 1 (20.0%) | 1 (1.6%) | 6.76 (p=0.034) |
| Don't like them | 8 (14.3%) | 2 (40.0%) | 14 (22.6%) | 2.68 (p=0.262) |
| Used other methods of contraception | 3 (5.4%) | 0 (0.0%) | 5 (8.1%) | .72 (p=0.699) |
| Don't need them | 4 (7.1%) | 0 (0.0%) | 9 (14.5%) | 2.31 (p=0.315) |
| Didn't think about it | 5 (8.9%) | 1 (20.0%) | 10 (16.1%) | 1.57 (p=0.455) |
| Know partner well | 21 (37.5%) | 0 (0.0%) | 11 (17.7%) | 7.80 (p=0.020) |

^aThese are among those who reported no condom use during last sexual encounter and actually provided a reason for not using (n=142 or 98.6% response rate) and are not mutually exclusive groups.

Table 4.

BIVARIATE ASSOCIATIONS BETWEEN CONDOM USE AT LAST SEX WITH MOST RECENT STEADY SEX PARTNER AND SELECTED COVARIATES (N=311)

| Covariates | Condom Use at Last Sex | | χ^2 (p-value) |
|---|------------------------|-------------|-----------------------|
| | Yes | No | |
| Age (years) | | | 9.93 (p=0.007) |
| <25 | 11 (14.3%) | 66 (85.7%) | |
| 25-49 | 11 (6.3%) | 165 (93.8%) | |
| 50+ | 11 (20.4%) | 43 (79.6%) | |
| Education | | | 2.22 (p=0.136) |
| Less than high school | 10 (7.8%) | 25 (14.0%) | |
| High school or higher | 118 (92.2%) | 154 (86.0%) | |
| Exposure to Interpersonal Violence | | | .56 (p=0.452) |
| Yes | 8 (14.3%) | 27 (10.8%) | |
| No | 48 (85.7%) | 224 (89.2%) | |
| History of Alcohol Use | | | .00 (p=0.998) |
| Yes | 21 (10.8%) | 174 (89.2%) | |
| No | 12 (10.7%) | 100 (89.3%) | |
| History of Illicit Drug Use | | | .01 (p=0.93) |
| Yes | 3 (11.5%) | 23 (88.5%) | |
| No | 31 (11.0%) | 251 (89.0%) | |
| Engaged in Anal Sex with Most Recent Steady Sex Partner | | | .10 (p=0.758) |
| Yes | 10 (11.6%) | 76 (88.4%) | |
| No | 19 (13.0%) | 127 (87.0%) | |
| Relationship Status by Partner Type | | | 4.63 (p=0.201) |
| Non-spouse, both steady and non-steady sex partners | 10 (15.2%) | 56 (84.8%) | |
| Non-spouse, steady sex partner only | 10 (14.1%) | 61 (85.9%) | |
| Spouse, both steady and non-steady sex partners | 9 (12.5%) | 63 (87.5%) | |
| Spouse, steady sex partner only | 6 (5.9%) | 96 (94.1%) | |
| Frequency of Discussing Safer Sex with Most Recent Steady Sex Partner | | | 1.43 (p=0.232) |
| Yes, have discussed it | 29 (12.8%) | 6 (7.8%) | |
| No, have not discussed it | 197 (87.2%) | 71 (92.2%) | |

results, using condom use at last sex with their most recent steady sex partners as the dependent variable. The total number of cases included in the multivariate logistic regression analyses was 216 (69.5% of all the women who reported having had a steady sex partner in the previous 12 months). The decrease in the number of cases included

Table 5.**BIVARIATE ASSOCIATIONS BETWEEN CONDOM USE AT LAST SEX WITH MOST RECENT NON-STEADY SEX PARTNER AND SELECTED COVARIATES (N=144)**

| Covariates | Condom Use at Last Sex | | χ^2 (p-value) |
|---|------------------------|------------|-----------------------|
| | Yes | No | |
| Age (years) | | | 3.97 (p=0.138) |
| <25 | 11 (34.4%) | 21 (65.6%) | |
| 25-49 | 16 (19.0%) | 68 (81.0%) | |
| 50+ | 4 (15.4%) | 22 (84.6%) | 3.24 (p=0.072) |
| Education | | | |
| Less than high school | 9 (15.0%) | 51 (85.0%) | |
| High school or higher | 23 (27.7%) | 60 (72.3%) | |
| Exposure to Interpersonal Violence | | | 2.89 (p=0.089) |
| Yes | 12 (31.6%) | 26 (68.4%) | |
| No | 19 (18.3%) | 85 (81.7%) | |
| History of Alcohol Use | | | .01 (p=0.926) |
| Yes | 20 (21.5%) | 73 (78.5%) | |
| No | 10 (20.8%) | 38 (79.2%) | |
| History of Illicit Drug Use | | | .03 (p=0.870) |
| Yes | 4 (23.5%) | 13 (76.5%) | |
| No | 27 (21.8%) | 97 (78.2%) | |
| Engaged in Anal Sex with Most Recent Steady Sex Partner | | | 3.49 (p=0.062) |
| Yes | 3 (9.7%) | 28 (90.3%) | |
| No | 19 (26.0%) | 54 (74.0%) | |
| Relationship Status by Partner Type | | | 4.63 (p=0.201) |
| Non-spouse, both steady and non-steady sex partners | 18 (27.3%) | 56 (84.8%) | |
| Non-spouse, steady sex partner only | 1 (16.7%) | 61 (85.9%) | |
| Spouse, both steady and non-steady sex partners | 13 (18.1%) | 63 (87.5%) | |
| Spouse, steady sex partner only | 13 (18.1%) | 96 (94.1%) | |
| Frequency of Discussing Safer Sex with Most Recent Steady Sex Partner | | | 1.43 (p=0.232) |
| Yes, have discussed it | 24 (26.7%) | 6 (7.8%) | |
| No, have not discussed it | 7 (14.6%) | 71 (92.2%) | |

in the logistic regression analysis was due to missing data for some of the covariates. Only those women who had provided data on every covariate in the model were included in the analytical model. The overall model was marginally statistically significant ($\chi^2(11)=18.57, p=.069$). Two of the covariates emerged as statistically significant.

Women who were from 25 to 49 years of age were much less likely than others to report condom use compared to their older peers (Odds Ratio [OR] = 0.16, 95% Confidence Interval [CI] = 0.047–0.531). Additionally, women who reported having a spouse and having had both a steady and a non-steady sex partner were much more likely to report using a condom at last sex with this partner compared with those women who had a spouse but had only a steady sex partner (OR=3.94, 95% CI=1.01–14.06).

Table 7 presents the multivariate logistic regression results, using condom use at last sex with their most recent non-steady sex partners as the dependent variable. The total number of cases included in the multivariate logistic regression analyses was 96 (47.9% of all the women who reported having had a non-steady sex partner in the previous 12 months). The decrease in the number of cases included in the logistic regression analysis was due to missing data for some of the covariates. Only women who had provided data on every covariate in the model were included in the analytical

Table 6.

**MULTIVARIATE LOGISTIC REGRESSION ANALYSES OF
CONDOM USE AT LAST SEX WITH MOST RECENT
STEADY SEX PARTNER (N=216)**

| Variable ^a | Odds Ratio | 95% Confidence Interval |
|---|---------------|-------------------------------|
| Age (years) | | |
| <25 | 0.40 | (0.12–1.40) |
| 25–49 | 0.16 | (0.47–0.53)** |
| 50+ | — | — |
| Education | 1.89 | (0.73–5.27) |
| Relationship Status by Partner Type | | |
| Non-spouse, both steady and non-steady sex partner | 2.58 | (0.75–910.31) |
| Non-spouse, steady partner only | 1.75 | (0.45–6.38) |
| Spouse, both steady and non-steady sex partner | 3.50 | (1.10–14.06)* |
| Spouse, steady sex partner only | — | — |
| Exposure to Interpersonal Violence | 1.06 | (0.39–3.64) |
| History of Alcohol Use | 0.91 | (0.32–2.60) |
| History of Illicit Drug Use | 0.74 | (0.13–4.22) |
| Engaged in Anal Sex with this Partner | 1.41 | (0.53–3.74) |
| Frequency of Discussing Safer Sex with this Partner | 2.23 | (0.67–7.41) |

*p<.05

**p<.01

^aComparison group for each covariate in the model is as follows: age (50+ years); education (at least a high school education); relationship status by partner type (spouse, steady sex partner only); exposure to interpersonal violence (yes); history of alcohol use (yes); history of illicit drug use (yes); engaged in anal sex with this partner (yes); and, frequency of discussing safer sex with this partner (yes, have discussed it to some extent).

Table 7.**MULTIVARIATE LOGISTIC REGRESSION ANALYSES OF
CONDOM USE AT LAST SEX WITH MOST RECENT
NON-STEADY SEX PARTNER (N=96)**

| Variable ^a | Odds Ratio | 95% Confidence Interval |
|---|---------------|-------------------------------|
| Age (years) | | |
| <25 | 0.74 | (0.11–4.75) |
| 25–49 | 0.52 | (0.09–3.02) |
| 50+ | — | — |
| Education | 1.21 | (0.35–4.18) |
| Relationship Status by Partner Type | | |
| Non-spouse, both steady and non-steady sex partner | 1.36 | (0.42–4.36) |
| Non-spouse, non-steady sex partner only | 0.00 | (0.00–) |
| Spouse, both steady and non-steady sex partner | — | — |
| Exposure to Interpersonal Violence | 2.54 | (0.73–8.87) |
| History of Alcohol Use | 1.03 | (0.27–3.94) |
| History of Illicit Drug Use | 0.47 | (0.05–4.76) |
| Engaged in Anal Sex with this Partner | 0.31 | (0.07–1.31) |
| Frequency of Discussing Safer Sex with this Partner | 3.40 | (0.88–13.14)* |

* $p < .10$

^aComparison group for each covariate in the model is as follows: age (50+ years); education (at least a high school education); relationship status by partner type (spouse, steady sex partner only); exposure to interpersonal violence (yes); history of alcohol use (yes); history of illicit drug use (yes); engaged in anal sex with this partner (yes); and, frequency of discussing safer sex with this partner (yes, have discussed it to some extent).

model. The overall model was not statistically significant ($\chi^2(10) = 13.52, p = .196$), with only one covariate emerging as marginally significant. Women who reported having discussed safer sex with this partner were more likely to report using a condom during their last sexual encounter with this partner than were women who reported having had no such discussions (OR = 3.40, 95% CI = 0.88–13.14).

Discussion

The examination of condom use by partner type is important considering the different contexts in which condoms may be used. The decision to examine condom use by partner type (i.e., steady *versus* non-steady) is based on previous research that has found that women tend to use condoms less frequently with steady or primary partners than they do with non-steady or non-primary partners.⁴¹ Early work by Misovich, Fisher, and Fisher revealed that women who perceive a partner to be a primary or committed

partner believe that they know their partners better, and feelings of security and trust—and the associated desire to maintain these feelings—produce and perpetuate elevated levels of HIV risk behavior in couples and serve as a frequently overlooked source of risk of HIV infection.⁴² Individuals characteristically believe that it is extremely unlikely that a trusted relationship partner would engage in behaviors that could infect them with HIV, and they believe that actively addressing the potential for HIV risk within their relationship would pose an unwarranted threat to relationship stability and maintenance. For these reasons, we decided to examine the partners by the different types.

Additionally, with respect to combining all non-steady partner types together as one category instead of examining the different types of non-steady partner types, this technique has been used before in previously published research.^{41,43} While there may be some differences in the usage of condoms depending on the type of non-steady sex partner (occasional, one-time, or paying partner), there was no research identified that examined condom use by non-steady sex-partner type. Therefore, we did not distinguish the different types of non-steady sex partners, using the rationale that we were concerned with our study subjects' condom use with their most recent non-steady sex partners as compared with that with their steady sex partners. Neither were we interested, at that time, in collecting data on the specific type of non-steady sex partners upon which the women were basing their responses.

The low levels of condom use reported among women in this sample are consistent with those reported in studies of other low-income-housed women living in the U.S.^{9,10} The reasons given by the women in this sample do not correspond to those given by women from the same population during focus groups.²⁴ However, this may be because we identified and listed reasons for not using condoms and had the women select the reasons, giving them an "other" category and providing space for them to elaborate on the reason, whereas in the focus groups, the women all talked together and the moderator/facilitator was able to ask the women to explain their perceived barriers for engaging in safer sex, especially using or introducing condoms into their current relationships.²⁴

While the reasons given for not using a condom with their most recent steady sex partner are expected (e.g., they know their partners well and for that reason perceive no need to use condoms), the reasons given for not using condoms with their most recent non-steady partners justify further research into this area. As described above, a non-steady sex partner was defined as an occasional, a one-time, or a paying partner. However, the most common reason that the participants gave for not using condoms during their last sexual encounters with these sex partners was that they knew their partners well. This finding is troublesome and requires further research if we are to understand what "knowing a partner well" really means to these women. Interventions need to be developed that will help women to better assess their risk of HIV acquisition.

The fact that a significant proportion of the participants reported engaging in anal intercourse with both partner types but still perceived no need to use condoms suggests that these women are unable or unwilling to assess their actual risk of HIV acquisition. For example, of the 86 women who reported engaging in anal intercourse with their most recent steady sex partners, 73.6% reported not using condoms with these partners in the previous three months; furthermore, among the 32 women who

reported engaging in anal intercourse with their most recent non-steady sex partners, 62.1% reported not using condoms with these partners in the previous three months (data not presented in the results section).

In addition, helping women to overcome the barrier of not liking condoms should be a priority in any HIV prevention intervention, as should promoting the concept of having condoms readily available. These women may not carry or have condoms in their possession for fear of being perceived as being "easy" and "looking for sex."³³ This is another area that warrants further research.

Another interesting but disconcerting finding that emerged was that approximately 44% of the women reported having both steady and non-steady sex partners in the previous 12 months, meaning they had multiple sex partners during this time frame. This number is more than three times that which has been reported in other research with Puerto Rican women.^{41,44-45} However, these studies did not distinguish whether the women being studied were impoverished or lived in low-income housing. Therefore, the figures presented in these studies may not be applicable to women who live in public housing. We identified one study that had a significant number of women who resided in public housing in the continental U.S.; 17% of the female residents in 10 public housing developments reported having had multiple sexual partners in the previous two months.⁴⁶ If one figures that 17% had had multiple partners in the previous two months, then one could easily assume a much larger percentage would have done in the previous 12 months.

This finding may suggest that there is something in the environment of public housing that is increasing the willingness of Puerto Rican women living in such housing to engage in sex with multiple sex partners at a rate much higher than is seen in their peers who do not live in public housing. The former may have a larger social network, which in urban African American women has been found to be associated with having multiple sex partners.⁴⁷ It has been suggested that the "structure of a network has consequences for its individual members and for the network as a whole, over and above effects of characteristics and behavior of the individuals involved."⁴⁸[p.196] Thus, if a given female resident belongs to a social network that promotes having multiple sex partners, then that woman may be more likely to subscribe to the characteristics of the norms of the existing social network. More specifically, this is evidence that the social networks to which public housing residents belong have a wide variety of impacts on their behaviors and on the likelihood of their using condoms or of their having multiple sex partners.⁴⁹

In addition, neighborhood factors, such as the size of the public housing development and its particular sociocultural characteristics, interact with personal networks and individual vulnerability to create an environment where risks may be more readily introduced and/or poorly prevented.⁴⁸ The four public housing developments from which the women were recruited for this study are considered to be larger developments, meaning that each one has more than 200 units. Larger public housing developments may create an environment where residents' personal and social networks tend to be larger. *Inner-city, low-income housing developments* constitute an environment where the potential for multiple contacts exists and, as such, may make it more likely for female residents to have multiple sex partners. Features of the social and built

environment of the public housing developments must be considered when examining any HIV-related risk behavior, including condom use and having multiple sex partners. In other words, a better understanding of the social and environmental factors that affect the risky behavior of engaging in sex with multiple partners and lack of condom use among women living in public housing is needed to guide the development of culturally appropriate interventions.

Limitations. While this study has presented some important findings regarding the patterns of condom use among women who live in public housing developments in Puerto Rico, it is important to note its limitations. First, by using a non-probability sample, we are unable to generalize these findings to the population of female residents of public housing developments in Puerto Rico.⁵⁰ Additionally, using a non-probability sample introduces potential sampling bias into this study, specifically voluntary response bias. This occurs when sample members are self-selected volunteers.⁵⁰ However, due to the restrictions placed upon us by the public housing administration (citing their fear for our safety if we went to women's individual apartments), we were able to do the HIV testing and data collection only in the community center.

Another limitation of this study is the cross-sectional nature of the data collected and presented. A weakness of cross-sectional data is not being able to speak to causality between the independent and dependent variables, allowing only for the identification of an association between them.⁵⁰

Lastly, the use of self-reported data leads to issues of recall bias and the possible over-reporting of socially acceptable behaviors.⁵¹ However, due to the extremely low rates of condom use reported by these women, it is unlikely they are over-reporting their condom-use behavior.

It is important to acknowledge that the lack of statistical significance in most of the bivariate and multivariate analyses might be considered a weakness. However, an examination of the trends between the groups suggests that there may exist an association though our very small sample sizes decreased the power of the analyses and the ability to detect any statistical significance. Nevertheless, while an association is not statistically significant, it still may be of importance to public health.

Conclusion. The findings from this study have shed light on the reasons for not using condoms with both steady and non-steady sex partners among members of an at-risk population for HIV. Interventions developed for members of this population must address these reasons and provide skills and strategies for better assessing the risk of acquiring HIV. In addition, the intervention messages and activities need to be culturally appropriate, given the influence that culture has on an individual's behavior. These targeted, culturally appropriate interventions could be effective in increasing condom use among a variety of impoverished women, irrespective of partner type, thereby decreasing the risk of HIV acquisition in this population.

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Notes

1. UNAIDS. Report on the global AIDS epidemic. Geneva, Switzerland: The Joint United Nations Program on HIV/AIDS, 2010. Available at: http://www.unaids.org/documents/20101123_GlobalReport_em.pdf.
2. Carovano K. More than mothers and whores: redefining the AIDS prevention needs of women. *Int J Health Serv.* 1992;21(1):131–42.
3. Courtenay WH. Better to die than to cry? A longitudinal and constructionist study of masculinity and the health risk behavior of young American men. (Doctoral dissertation, University of California at Berkeley.) *Dissertation Abstracts International*, 1998;59(08A):232. (Publication number AAT 9902042.)
4. U.S. Department of Health and Human Services/Office on Women's Health. Women's Health. HIV/AIDS: women are at risk of HIV. U.S. Department of Health and Human Services/Office on Women's Health, 2011 Jul. Available at: <http://womenshealth.gov/hiv-aids/women-are-at-risk-of-hiv/>
5. Murrain M, Barker T. Investigating the relationships between economic status and HIV risk. *J Health Care Poor Underserved.* 1997 Nov;8(4):416–23.
6. Simon PA, Hu DJ, Diaz T, et al. Income and AIDS rates in Los Angeles County. *AIDS.* 1995 Mar;9(3):281–4.
7. Krueger LE, Wood RW, Diehr PH, et al. Poverty and HIV seropositivity: the poor are more likely to be infected. *AIDS.* 1990 Aug;4(8):11–4.
8. Ruiz J, Molitor F, Parikh-Patel A. HIV, hepatitis, STDs, and related risk behaviors among young women residing in low-income neighborhoods in northern California: April 1996–Jan 1998. San Francisco, CA: California Department of Health Services, 1999. Available at: <http://www.cdph.ca.gov/programs/aids/Documents/RPT1999HIVHepSTDandRelatedRiskAmongYoungWomen1996-1998.pdf>.
9. Wenzel SL, Tucker JS, Elliot MN, et al. Prevalence and co-occurrence of violence, substance use and disorder, and HIV risk behavior: a comparison of sheltered and low-income housed women in Los Angeles County. *Prev Med.* 2004 Sep;39(3):617–24.
10. Sikkema KJ, Kelly JA, Winett RA, et al. Outcomes of a randomized community-level HIV prevention intervention for women living in 18 low-income housing developments. *Am J Public Health.* 2000 Jan;90(1):57–63.
11. Kalichman SC, Williams EA, Cherry C, et al. Sexual coercion, domestic violence, and negotiating condom use among low-income African American women. *J Womens Health.* 1998 Apr;7(3):371–8.
12. Carey MP, Braaten LS, Jaworski BC, et al. HIV and AIDS relative to other health, social, and relationship concerns among low-income urban women: a brief report. *J Womens Health Gend Based Med.* 1999 Jun;8(5):657–61.
13. Soler H, Quadagno D, Sly DF, et al. Relationship dynamics, ethnicity and condom use among low-income women. *Fam Plann Perspect.* 2000 Mar–Apr;32(2):82–8, 101.
14. Vernon KA, Mulia N, Downing M, et al. "I don't know when it might pop up": understanding repeat HIV testing and perceptions of HIV among drug users. *J Subst Abuse.* 2001;13(1–2):215–27.

15. Crosby RA, Yarber WL, Meyerson B. Prevention strategies other than male condoms employed by low-income women to prevent HIV transmission. *Public Health Nurs.* 2000 Jan-Feb;17(1):53-60.
16. Sormanti M, Wu E, El-Bassel N. Considering HIV risk and intimate partner violence among older women of color: a descriptive analysis. *Women Health.* 2004;39(1):45-63.
17. United Nation Development Program. HIV/AIDS: an evaluation of UNDP's role and contribution to the HIV/AIDS response in South Africa and Ethiopia. New York, NY: United Nations Development Program, 2006 Sep. Available at: http://www.undp.org/evaluation/documents/HIVAIDS2006_VolII.pdf.
18. De Cock KM. Epidemiologic trends. Presented at the Conference on Retroviruses and Opportunistic Infections, Chicago (IL), 1998 Feb 1-5.
19. Masmanga GI, Urassa E, Spiegelman D, et al. Socioeconomic status and prevalence of HIV infection among pregnant women in Dar es Salaam, Tanzania. Vancouver, Canada: International Conference on AIDS, 1996; 11:345 (abstract no. Tu.C.2464).
20. Schivte M. Poverty and the role of men and women in the spread of HIV and AIDS in the African sub-continent-situation analysis. Geneva, Switzerland: International Conference on AIDS, 1998; 12:867 (abstract no. 43102).
21. Yamuah LK. Socioeconomic factors influencing the spread of HIV/AIDS of women in the Gambia. Geneva, Switzerland: International Conference on AIDS, 1998; 12:727 (abstract no. 34208).
22. Essein EJ, Meshack AF, Peters RJ, et al. Strategies to prevent HIV transmission among heterosexual African American women. *Int J Equity Health.* 2005;4(1):1-9.
23. von Sadosky V, Ryan-Wenger N, Germann S, et al. Army women's reasons for condom use and nonuse. *Womens Health Issues.* 2008 May-Jun;18(3):174-80.
24. Abreu S, Sala AC, Candelaria EM, et al. Understanding the barriers that reduce the effectiveness of HIV/AIDS prevention strategies for Puerto Rican women living in low-income households in Ponce, PR: a qualitative study. *J Immigr Minor Health.* 2010 Feb;12(1):83-92.
25. Puerto Rico Department of Health. HIV/AIDS surveillance report. San Juan, Puerto Rico: Puerto Rico Department of Health, 2010.
26. Centers for Disease Control and Prevention. HIV surveillance report. Atlanta, GA: Centers for Disease Control and Prevention, 2011.
27. Centers for Disease Control and Prevention. HIV surveillance in women. Atlanta, GA: Centers for Disease Control and Prevention, 2010.
28. U.S. Census Bureau. 2010 census data. Washington, DC: U.S. Census Bureau, 2011. Available at: <http://2010.census.gov/2010census/data/>.
29. Norman LR, Abreu S, Candelaria E, et al. HIV testing practices among women living in public housing in Puerto Rico. *J Womens Health (Larchmt).* 2008 May;17(4):641-55.
30. Fuller CM, Borrell LN, Latkin CA, et al. Effects of race, neighborhood, and social-network on age at indication of injection drug risk. *Am J Public Health.* 2005 Apr; 95(4):689-95.
31. Brown-Peterside P, Ren L, Chiasson MA, et al. Double trouble: violent and non-violent traumas among women at sexual risk of HIV infection. *Women Health.* 2002;36(3):51-64.
32. Kalichman SC, Williams EA, Cherry C, et al. Sexual coercion, domestic violence, and negotiating condom use among low-income African American women. *J Womens Health.* 1998 Apr;7(3):371-8.

33. Soler H, Quadagno D, Sly DF, et al. Relationship dynamics, ethnicity and condom use among low-income women. *Fam Plann Perspect.* 2000 Mar-Apr;32(2):82-8, 101.
34. Raffaelli M, Ontai LL. Gender socialization in Latino/a families: results from two retrospective studies. *Sex Roles: A Journal of Research.* 2004 Mar;50(5-6):287-99.
35. Montesinos L, Preciado J. Puerto Rico. In: Francoeur RT, ed. *The international encyclopedia of sexuality, Vol. IV.* New York, NY: The Continuum Publishing Company, 2001.
36. Pico I. *Machismo y educación en Puerto Rico.* Rio Piedras, Puerto Rico: Universidad de Puerto Rico, 1989.
37. Hunt D, Hammett T, Smith C, et al. Outreach to sex partners. In: Brown BS, Beschner GM, eds. *Handbook on risk of AIDS.* Westport, CT: Greenwood Press, 1993.
38. Centers for Disease Control and Prevention. *Prevention research synthesis query report.* Atlanta, GA: Centers for Disease Control and Prevention/HIV/AIDS Prevention Research Synthesis Project, 2004.
39. Stone AM. *The AIDS-related knowledge, attitudes, and behavioral skills of Hispanic and Anglo women.* (Dissertation.) Lubbock, TX: Texas Tech University/Department of Psychology, 1996.
40. U.S. Department of Health and Human Services. *Healthy people 2010.* In: *Understanding and improving health and objectives for improving health (2nd ed.).* Washington, DC: U.S. Government Printing Office, 2000.
41. Dixon D, Peters M, Saul J. HIV risk behavior among Puerto Rican women. *Health Care Women Int.* 2003 Jul;24(6):529-43.
42. Misovich SJ, Fisher JD, Fisher WA. Close relationships and elevated HIV risk behavior: evidence and possible underlying psychological processes. *Rev Gen Psychol.* 1997 Mar;1(1):72-107.
43. Norman LR. Predictors of consistent condom use: a hierarchical analysis of adults from Kenya, Tanzania and Trinidad. *Int J STD AIDS.* 2003 Sep;14(9):584-90.
44. Marin BV, Tschann JM, Gomez CA, et al. Acculturation and gender differences in sexual attitudes and behaviors: Hispanic vs. non-Hispanic White unmarried adults. *Am J Public Health.* 1993 Dec;83(12):1759-61.
45. Marin BV, Gomez CA, Hearst N. Multiple heterosexual partners and condom use among Hispanic and non-Hispanic Whites. *Fam Plann Perspect.* 1993 Jul-Aug;25(4):170-4.
46. Wagstaff DA, Kelly JA, Perry MJ, et al. (Community Housing AIDS Prevention Study Group.) Multiple partners, risky partners and HIV risk among low-income urban women. *Fam Plann Perspect.* 1995 Nov;27(6):241-5.
47. Neblett RC, Davey-Rothwell M, Chander G, et al. Social network characteristics and HIV sexual risk behavior among urban African American women. *J Urban Health.* 2011 Feb;88(1):54-65.
48. Schensul JJ, Levy JA, Disch WB. Individual, contextual, and social network factors affecting exposure to HIV/AIDS risk among older residents living in low-income senior housing complexes. *J Acquir Immune Defic Syndr.* 2003 Jun;33(Suppl 2):S136-52.
49. Friedman SR. Promising social network research results and suggestions for a research agenda. *NIDA Res Monogr.* 1995;151:196-215.
50. Issel LM. *Health program planning and evaluation: a practical systematic approach for community health.* Sudbury, MA: Jones and Bartlett Publishers, 2009.
51. Catania JA, Gibson DR, Chitwood DD, et al. Methodological problems in AIDS behavioral research: influences on measurement error and participation bias in studies of sexual behavior. *Psychol Bull.* 1990 Nov;108:339-62.