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Sexual Health and Socioeconomic-Related Factors Among HIV-Positive Men Who Have Sex with Men in Puerto Rico

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Abstract

Most of the research among HIV-positive populations has been approached from behavioral risk models. This is particularly true for those otherwise socially vulnerable groups like men who have sex with men (MSM). As a response to this pattern, we examined data from an ongoing health promotion research being conducted in Puerto Rico (PR). The study is limited to HIV-positive MSM and consists of the participation in a survey interview that includes domains used to assess indicators of socio-economic-related factors (age, educational level, employment, religion, and partnership status) and sexual health (sexual satisfaction, condom use, and sexual health knowledge (SHK)). Participants reported a relatively high level (75 %) of sexual satisfaction and inconsistent condom use (50.9 % reported always using a condom). A deficient (61 %) SHK was also reported. In multivariate analyses, a higher educational level was associated with higher sexual satisfaction ($a\beta = 3.223$; 95 % CI 0.291–6.156) and higher levels of SHK ($a\beta = 1.328$; 95 % CI 0.358–2.297), while unemployment was associated with less condom use ($aOR 0.314$; 95 % CI 0.122–0.810). Not having a primary sexual partner was associated with less sexual satisfaction ($a\beta = -3.871$; 95 % CI -7.534 – 0.208) and more condom use ($aOR 4.292$; 95 % CI 1.310–14.068). Findings support the notion that men of a disadvantaged socioeconomic position may have a poorer sexual health status; with a lower level of education and unemployment leading this disparity. Findings also evidence that partnership status may have a role in the sexual health of HIV-positive MSM. To our knowledge, this is the first comprehensive analysis of sexual health and socio-economic indicators among Hispanic/Latino HIV-positive MSM in PR and in the Caribbean. Findings provide valuable information to address the sexual health needs of an underserved population.

Keywords

Sexual health; Puerto Rico; Men who have sex with men; HIV; Latino; Hispanic; Caribbean; Sexual orientation

Introduction

Despite major advances to prevent HIV transmission and reduce the impact of the epidemic, HIV/AIDS continues to be a main public health threat. HIV/AIDS continues to disproportionately affect socially vulnerable populations, including racial and ethnic groups, women, and men who have sex with men (MSM) (McDaid & Hart, 2010; Joint United Nations Programme on HIV/AIDS [UNAIDS], 2013). As of 2012, approximately 35.3 million persons were living with HIV and nearly 2.3 million acquired the virus worldwide. The HIV epidemic among MSM is severe, reemerging, and expanding globally (Beyrer, 2010; Beyrer et al., 2012).

People from Puerto Rico (PR) are a significant part of the growing epidemic in the Caribbean region and among Hispanic/Latinos in the U.S. In the Caribbean, the understanding of HIV among MSM is particularly challenged by stigma and discrimination toward HIV and the population most at risk for infection (Figueroa, 2014; Rodríguez-Díaz, 2013; UNAIDS, 2013). Nonetheless, it has been established that MSM in the Caribbean represent a significant share of the HIV infections, and in some countries the incidence rate among this group is increasing (Figueroa, 2014; UNAIDS, 2013).

Among MSM in the U.S., Hispanic/Latino men represent more than a fifth (21 %) of all new HIV infections (Centers for Disease Control and Prevention, 2013a, b). The incidence of HIV in PR is twice that of the general U.S. population (45 per 100,000) (CDC, 2009), and almost double the overall U.S. Hispanic/Latino population (CDC, 2008; Hall et al., 2008). In fact, the risk for HIV infection in PR is higher than in the U.S. The CDC estimated that the life time risk for diagnosis of HIV infection among Hispanics/Latinos was 1.92 % (1 in 52) (over three times the rate for non-Hispanic/Latino whites), but for Hispanics/Latinos living in PR, the estimated lifetime risk was 2.08 % (1 in 48) (CDC, 2010). Researchers have estimated that 1 % of the household adult population (21–64 year old) in PR is HIV-positive (Pérez et al., 2010). The prevalence rate of HIV among MSM is estimated to be 7.3 % (Colón-López et al., 2011; Pérez et al., 2010); this is 13 times higher than among men who only engage in sexual practices with women (non-MSM) (Colón-López, Soto-Salgado, Rodríguez-Díaz, Suárez, & Pérez, 2013).

Evidently, HIV/AIDS has had a significant impact on the current approaches to health and well-being. For example, during the last three decades much of the research and understanding of sexual health has been impacted by the HIV epidemic. Overall, sexual transmission of HIV has been the leading cause of infection globally and that may explain the linkage between HIV/AIDS and the public health approach to sexual health.

In this context, several frameworks to understand sexual health have been proposed. Conceptually, sexual health has been defined in different ways and approaches vary from technical to practical perspectives shaped by historic and sociopolitical experiences (Rodríguez-Díaz, 2013). In general, sexual health has been defined as the experience of the ongoing process of physical, psychological, and social-cultural well-being related to sexuality. It has been emphasized that sexual health encompasses not only a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having

pleasurable and safe sexual experiences, free of coercion, discrimination and violence, but also the inclusion of mental health, responsibility, and the importance of the protection of human rights for health (Edwards & Coleman, 2004).

Based on the guidelines provided by the World Health Organization (WHO, 2006), the Pan American Health Organization and the World Association for Sexual Health (2000), it has been proposed to understand sexual health promotion as the process of enabling people to increase control over and thereby improve their sexual health (Rodríguez-Díaz, 2013). This approach suggests increasing control over the determinants of sexual health—which are the factors that are largely responsible for the differences in the health outcomes in diverse populations (CDC, 2010; Marmot, 2005).

Efforts have been made to tailor sexual health promotion actions to be responsive of its core values deeply arrayed on the protection of human rights. Among MSM, it has been proposed to understand sexual health beyond the presence or absence of disease and to include MSM's approach to sexual practices, relationships, and how these are affected by physical and mental well-being (Wolitski & Fenton, 2011). A better understanding of the social conditions in which Latino/Hispanic MSM, and particularly HIV-positive MSM, live and work may better explain epidemiological trends in this population.

Not with standing these efforts to promote sexual health and the incorporation of emerging frameworks, limited attention has been placed on the study of the sexual health of people with HIV. Most of the research among HIV-positive populations has been approached from behavioral risk models. This is particularly true for those otherwise socially vulnerable groups like MSM. Due to the devastating impact of the HIV epidemic among MSM, it has been suggested to implement a sexual health approach to potentially improve our understanding of MSM's sexual practices and relationships, reduce the incidence of HIV and other STI, and improve their health and well-being (Wolitski & Fenton, 2011). Evidencing the role of socioeconomic-related factors in the sexual health of populations disproportionately impacted by health inequities facilitates documenting the magnitude of these inequities and provides for the development of future research and interventions.

With the aim of contributing via a different approach to understanding the sexual health of HIV-positive MSM, this study analyzes the role of selected sexual health and socioeconomic indicators in a sample of HIV-positive MSM in PR. In order to achieve this, as described in detail below, we selected indicators of sexual health based on models suggested by the WHO, the World Association for Sexual Health and current research. Correspondingly, we selected indicators to describe socioeconomic status.

Method

Participants

Data for this study were collected in collaboration with community-based organizations providing HIV care in PR. Participation in this research was limited to HIV-positive gay men and other MSM, at least 16 years of age, and who reported having had sex with at least one male partner in the last 12 months. In agreement with community partners and

recognizing the differences in the characteristics and needs of transgender and transsexual (*trans*) persons, individuals who self-identified as *trans* were excluded from this study.

Participants were recruited from waiting rooms and through referrals from case managers at collaborating organizations, as well as through using flyers posted on-line and shared in several social networks and mailing lists. All men in the study provided written consent to participate and received a monetary incentive for their participation. All study procedures were approved by the Human Research Subjects Protection Office of the University of Puerto Rico-Medical Sciences Campus.

Measures and Procedure

Sexual Health Indicators—Several technical documents from the World Health Organization and the Pan American Health Organization (PAHO & World Association for Sexual Health [WAS], 2000; WHO, 2006) were used to select the sexual health indicators assessed in this study. This selection was also influenced by expert recommendations in the field of sexual health, HIV and the health of sexual minorities, particularly MSM (CDC, 2010; Edwards & Coleman, 2004; WAS, 2008; Wolitski & Fenton, 2011). As a result, the sexual health indicators used for the study were sexual satisfaction, condom use, and sexual health knowledge (SHK). Described and measured as shown in the following paragraphs, these variables provided for a comprehensive understanding of sexual health among MSM as they cover core elements of sexuality and sexual health; pleasure, risk or preventive practices, and sexual health education.

Sexual Satisfaction—For this study, sexual satisfaction was measured using the short version of the New Sexual Satisfaction Scale (NSSS) (Stulhofer, Busko, & Brouillard, 2011a, b) which in 12 items assesses five dimensions: sexual sensations, sexual presence/awareness, sexual exchange, emotional connection/closeness, and sexual activity. This scale had a multicultural development and testing (Stulhofer et al., 2011b) and has been previously translated to Spanish and adapted for Puerto Rican populations using back and forward translation with an expert panel (Rivera-Román & Candelario-Rosas, 2011). As a measure of the scale's internal consistency, Cronbach's α was calculated. An $\alpha=0.919$ was observed, suggesting high internal consistency or close relation between the scale's items.

Condom Use—We asked participants the frequency with which they had used condoms for each sexual practice during the past 3 months. The sexual practices assessed were vaginal intercourse (VI), insertive anal intercourse (IAI) and receptive anal intercourse (RAI). Participants reported how often (always, almost always, about half of the time, almost never, or never) they used condoms for particular sexual practices. Consistent with other research, condom used was dichotomized in order to clearly differentiate levels of risk (Noar, Cole, & Carlyle, 2006; Rodríguez-Díaz et al., 2014). To dichotomize condom use (yes/no), only those who reported always using a condom in each of their sexual practices were coded as “yes.”

Sexual Health Knowledge—SHK was measured using the Sexual Health Knowledge Questionnaire for HIV-positive MSM. This scale, developed by Vanable, Brown, Carey, and

Bostwick (2011), includes 18 true or false questions and assess domains related to behavioral-risk such as co-infection, sexually transmitted infections (STI), and sexual practices. For this study, the scale was translated to Spanish and adapted by the authors using culturally appropriate methods previously applied to other sexuality related measures (Rodríguez-Díaz, Reece, Dodge, & Herbenick, 2009).

Sociodemographic and Socioeconomic-Related Indicators—General sociodemographic data were collected among research participants. Since the study was designed for HIV-positive men, several questions were included to assess HIV-related characteristics. Participants provided date of birth and date of HIV diagnosis and we calculated their age, age at the time of HIV diagnosis and years living with HIV. They also reported if they had ever received an AIDS diagnosis and if ever in their lifetime they had been diagnosed with another STI other than HIV. Participants also provided the place where they were born (in PR, in the U.S., or outside U.S.), area of residence (they were asked to provide municipality of residence), and their sexual orientation based on self-identification (homosexual/gay, heterosexual or bisexual).

The socioeconomic indicators selected for this analysis were age (calculated based on date of birth), educational level (High school or less, at least some years in college) employment (employed or student and unemployed), religion, (none, Roman catholic, protestant, other) and partnership/relationship status (no primary partner, partner with unknown HIV status, serodiscordant partner, seroconcordant partner). These variables were selected based on its documented role on health status and access to social well-being, wealth or economic resources (CDC, 2013a, b; PAHO & WAS, 2000; WHO, 2008). We also considered previous analyses on the role of these indicators in health inequities (Asada, Whipp, Kindig, Billard, & Rudolph, 2014). Similarly, previous research addressing sexual health and HIV were also considered (Ruiz-Muñoz et al., 2013; Varas-Díaz, Neilands, Malavé-Rivera, & Betancourt, 2010; Varas-Díaz et al., 2014; Wabiri & Taffa, 2013).

Although income can be used as an indicator for socioeconomic status, recent studies in PR have demonstrated the inconsistencies and difficulties of using personal or house hold income to assess socioeconomic status. This is particularly true among non-heterosexual populations which have documented high educational levels, lower employment rates than the average population, and lower average income (Rodríguez-Díaz et al., in press). In the socioeconomic indicators assessed in this study, income—as a variable of economic status—was not included to reduce the potential errors interpreting research findings.

Descriptive statistics and multivariate analyses were conducted to measure association between socioeconomic characteristics and sexual health indicators. Additionally, multicollinearity within the variables included in the regression model was measured. All analyses were conducted using SPSS version 22.

Results

From October 2013 to May 2014, a total of 138 HIV-positive MSM participated in the study. Sample size variation was observed for each dependent variable; therefore,

descriptive data have been included for each analysis (See Tables 1, 2, 3 and 4). In general, the average age of participants was 38 years (ranging from 20 to 68). The average age at HIV diagnosis was 28 and participants reported having been living with HIV for an average of 10 years. Most of them have never been diagnosed with AIDS (84.8 %) and two out of three (65.9 %) have been diagnosed with at least one STI (other than HIV) in their lifetime. Most of these men were born in PR (89.1 %) and reported living in the San Juan metropolitan area (83.3 %). Almost two-third (63.9 %) of study participants self-identified as homosexual/gay, while 22.1 % self-identified as bisexual and 14.0 % as heterosexual.

Sexual Satisfaction

Using the NSSS, with scores ranging from 12 to 60, a mean score of 45.3 ($SD = 8.3$) was observed in the sample. This is, 75 % of research participants reported to be “very sexually satisfied”. Using bivariate analyses, education level ($p = 0.046$) and partnership ($p < 0.001$) resulted in a statistically significant association with sexual satisfaction (See Table 2). Individuals with higher education reported to be generally more sexually satisfied ($a\beta = 3.223$; 95 % CI 0.291–6.156 for participants with at least some years of college education compared to those with at most a high school education).

The reference category selected for the partnership variable was those who reported having an HIV-positive primary partner since scientific literature has stated important differences in the sexual satisfaction and risk/protective practices of gay men and other MSM according to the serological status of their partners (Frost, Stirratt, & Ouellette, 2008; Nieto-Andrade, 2010; Starks, Gamarel, & Johnson, 2013). In our study, most (65 %) of the participants reported having a main sexual partner. No statistically significant difference was found when contrasting the sexual satisfaction of research participants based on seroconcordance or serodiscordance with main partner. However, those with no primary partner were significantly less satisfied when compared to participants who reported having a primary partner who was HIV-positive ($a\beta = -3.871$; 95 % CI -7.534 to -0.208). Also, a marginally significant association was observed in the bivariate analysis for age groups ($p = 0.089$); participants who were 49 years and older were significantly less satisfied than participants between the ages of 17–32 ($\beta = -4.367$; 95 % CI -8.289 to -0.445). This effect was not consistent when included in the multivariate analysis (See Table 2 for details). Multicollinearity was assessed for the independent variables included in the regression model. Results of this analysis showed that none of the variables should be excluded from the model.

Condom Use

Study participants were asked about condom use for each of the sexual practices (including VI, IAI, RAI) they had engaged in the 3 month period that preceded the interview. About half of the sample (50.9 %) reported always using condoms. As included in Table 3, in the bivariate analysis employment was statistically associated with condom use ($p = 0.008$). After multivariate analysis it was found that unemployed participants were less likely to report condom use compared to those who were employed or students at the moment of the interview ($aOR 0.314$; 95 % CI 0.122–0.810). Although the variable “partnership” in the bivariate analysis resulted only in a marginally significant association with condom use (p

=0.052), in the multivariate analysis, participants with no primary partner were four times more likely to report condom use than those who reported having an HIV-positive primary partner (*aOR* 4.292; 95 % CI 1.310–14.068).

Sexual Health Knowledge

Relatively low SHK was identified among study participants. A mean score of 11.2 (SD =2.7) or 61 % was observed in the general sample. Education ($p =0.001$) and employment ($p =0.007$) were associated with scale's scores in the bivariate analyses. Participants with higher education generally reported higher SHK ($a\beta = 1.328$; 95 % CI 0.358–2.297 for individuals with at least some college years of education compared to those with at most a high school education). Unemployed individuals ($a\beta = -1.009$; 95 % CI -2.024 – 0.005 compared to those employed or students) and those with no primary partner ($a\beta = -1.196$; 95 % CI -2.405 – 0.013 compared to individuals with a seroconcordant primary partner) obtained marginally significantly lower SHK scores. These effects were not consistent when included in the multivariate analysis. See Table 4 for details.

Discussion

To our knowledge, this is the first comprehensive analysis of sexual health and socioeconomic indicators among Hispanic/Latino HIV-positive MSM in PR and in the Caribbean. In general, findings suggest that this sample of HIV-positive MSM, on average, has a relatively high level of sexual satisfaction, uses condoms inconsistently, and has a deficient level of SHK. In bivariate and multivariate analyses, men with a higher educational level have three times more sexual satisfaction than those with a lower educational level, and they also have a higher level of SHK. Those participants who reported to be unemployed reported a lower rate of condom use than those that reported to be employed or students. On the other hand, not having a primary sexual partner was associated with less sexual satisfaction, four times more likelihood to report condom use, and a marginal association with low SHK.

Overall, findings support the relationship previously documented between educational level and sexual satisfaction (Haavio-Mannila & Kontula, 1997). Similarly, research findings are consistent in evidencing the role of education on sexual health, particularly its role in SHK and its impact on HIV-related risks (O'Leary, Jemmott, Stevens, Rutledge, & Icard, 2014).

Despite the limited research among HIV-positive MSM in PR and in the Caribbean region, scientific literature has previously documented that among MSM sexual satisfaction can be associated with an increased risk for infection with HIV and other STI (Balán, Carballo-Diéguez, Ventuneac, & Remien, 2009; Carballo-Diéguez et al., 2011). Similarly, researchers have found inconsistent condom use among Hispanic/Latino MSM in the U.S. (Calabrese, Reisen, Zea, Poppen, & Bianchi, 2012; Carballo-Diéguez, Miner, Dolezal, Rosser, & Jacoby, 2006). Conversely, SHK has not been studied as widely among HIV-positive gay men and other MSM. Previous studies have documented that knowledge about HIV and STIs might act as a protective or risky determinant of sexual behavior, especially in matters of adherence and treatment regimens (Swenson et al., 2010).

The cultural and sociopolitical-historical context among men, same-sex sexual practices, and HIV in Hispanic/Latino communities and in the Caribbean may influence the way in which religion may play a role in the sexual health of MSM. Yet, research has evidenced both; positive and negative association between religion and sexual health (Dalmida, Koenig, Holstad, & Wirani, 2013; Galvan, Collins, Kanouse, Pantoja, & Golinelli, 2007; Shaw & El-Bassel, 2014). Based on previous research on the role of religion on sexuality and HIV in PR (Varas-Díaz et al., 2010, 2014), it was surprising that religion was not a factor significantly related with the sexual health indicators selected for this analysis. None the less, it is recommended to continue researching the role of religion on health, particularly among historically oppressed populations.

Research findings should be understood with its limitation. Data were collected from a convenience sample of men who consented to participate in the study and were aware of its sexual nature. Consequently, they may have been more inclined to answer questions related to sexuality. Therefore, findings are not generalizable to HIV-positive MSM in PR. Due to the cross-sectional nature of the study, changes associated with the sexual health indicators selected for the analysis cannot be assessed. Further, as participants were mostly recruited from and engaged in care at the community level, clustering effect might be a bias in the analysis.

Given the fact that condom use was dichotomized, it was not optimal for identifying participants' practices. Likewise, findings regarding sexual satisfaction and condom use based on partnership status should be considered based on the analysis conducted. While the findings suggest that men without a primary sexual partner might have less sexual satisfaction, this cannot be interpreted based exclusively on the differences between having or not having a partner or the HIV status of the partner. These two conditions (not having a primary sexual partner and seroconcordant partner) might be independently and concurrently associated with sexual satisfaction.

Similarly, although marginal, a significantly higher rate of condom use among men without a primary sex partner was found. This finding was significant after comparing to HIV-positive MSM with seroconcordant partners. It might be considered that these HIV-positive MSM are engaging in more frequent condom use when engaging in sexual intercourse with casual/non-primary sexual partners; a practice that has been documented among other samples of HIV-positive MSM (Cambou et al., 2014; Niderost, Gredig, Roulin, & Rickenbach 2011). Considering the study limitations, this might suggest protective sexual practices that can be reinforced and encouraged.

Future research is encouraged to elaborate and address the intricacies and dyadic relation of socioeconomic and sexual health indicators of populations made vulnerable. There is a need to understand the role of income in the socioeconomic status and well being of gay men, MSM and other non-heterosexual groups. Other researchers have supported a call to describe the dynamics that lead to the linkages of education, employment and sexual health (Kalichman & Rompa, 2000; Rodriguez-Diaz et al., in press; Swenson et al., 2010). Future equalitative research may assist in describing how these are experienced by HIV-positive

MSM, particularly those who are part of groups describes as racial, ethnic or other minorities.

These findings provide researchers, interventionists, and public health authorities with valuable information to address the sexual health needs of a population otherwise underserved and under-represented. Following good practices to address HIV-related issues (Adimora & Auerbach, 2010; Beyrer et al., 2011; Crepaz et al., 2014; Dukers-Muijers et al., 2012; Fauci, Folker, & Dieffenbach, 2013; Moss, Martin, Klausner, & Brown, 2014; Thrun, 2014), it is recommended to combine strategies to promote sexual health of HIV-positive MSM. These combined strategies may include comprehensive primary care, comprehensive sexuality education, and capacity building on HIV and sexual health among healthcare providers. Moreover, following health promotion principles, these combined interventions should address, for example, the social determinants of health—such as employment and education—that may have an impact on the sexual health and general well-being of HIV-positive MSM. From a policy perspective, findings suggest extending the understanding of health inequities to revise and develop policies that facilitate a better context for the well-being of this population by reducing social exclusion. Issues such as marriage equity, protection from violence, attention to stigma and homophobia as well as protection from discrimination in the worksite have been documented as appropriate tools to reduce health inequities among gay men and other MSM (Campbell, 2013; Gonzales, 2014; Halkitis, 2012; Logie, 2012; Molina & Ramirez-Valles, 2013) and the impact of the HIV epidemic on these groups (Mayer et al., 2012; Phillips et al., 2013; Rodriguez-Diaz et al., in press).

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Table 1

Sociodemographic and HIV-related characteristics of a sample of HIV-positive MSM in Puerto Rico ($N = 138$)

	M	SD
Age	38.4	11.2
Age of HIV diagnosis	28.4	8.6
Years living with HIV	10.0	7.8

	<i>n</i>	%
Diagnosed with AIDS	21	15.2
Diagnosed with other STI ^a	91	65.9
Place where born		
Puerto Rico	123	89.1
State of the US	12	8.7
Outside the US	3	2.2
Area of residence		
San Juan metro area	115	83.3
Non-San Juan metro area	23	16.7
Sexual orientation		
Heterosexual	19	14.0
Homosexual	87	63.9
Bisexual	30	22.1

^aSTI's included were chlamydia, gonorrhea, syphilis, herpes, human papillomavirus, hepatitis B, hepatitis C

Table 2
Sexual satisfaction stratified by selected variables in a sample of HIV-positive MSM in Puerto Rico ($N = 134$)

	<i>n</i>	Satisfaction score		<i>p</i>	β (95% CI)	$a\beta$ (95% CI)
		<i>M</i>	<i>SD</i>			
Age (years)						
17–32	44	46.8	7.6		1	1
33–48	62	45.5	8.2		-1.328 (-4.526–1.870)	-1.625 (-4.849–1.599)
49+	28	42.4	9.1		-4.367 (-8.289 to -0.445)	-3.487 (-7.399 to 0.424)
Total	134	45.3	8.3	0.089		
Education						
High school or less	57	43.5	9.0		1	1
At least some college years	77	46.6	6.6		3.063 (0.235–5.890)	3.223 (0.291–6.156)
Total	134	45.3	8.3	0.046		
Employment						
Employed or student	73	45.7	7.2		1	1
Unemployed	61	44.7	9.5		-1.005 (-3.855–1.846)	-0.337 (-3.448–2.773)
Total	134	45.3	8.3	0.487		
Religion						
None	27	45.4	8.5		1	1
Roman Catholic	55	44.8	7.4		-0.589 (-4.476–3.298)	0.817 (-2.973–4.606)
Protestant	38	45.2	9.2		-0.223 (-4.387–3.940)	1.223 (-2.905–5.350)
Other	14	47.0	9.2		1.593 (-3.855–7.040)	3.667 (-1.637–8.990)
Total	134	45.3	8.3	0.856		
Partnership						
No primary partner	47	41.6	9.0		-4.717 (-8.252 to -1.182)	-3.871 (-7.534 to -0.208)
Don't know HIV Status	16	44.7	8.0		-1.625 (-6.348–3.098)	-2.077 (-7.096–2.942)
Partner is HIV negative	39	49.1	6.7		2.764 (-0.915–6.444)	3.206 (-0.508–6.921)
Partner is HIV positive	32	46.3	7.0		1	1
Total	134	45.3	8.3	< 0.001		

Bold values indicate statistical significance ($p < 0.05$)

β Beta coefficient (simple linear regression), $a\beta$ adjusted beta coefficient (multiple linear regression), Cronbach $\alpha = 0.919$

Table 3

Condom use stratified by selected variables in a sample of HIV-positive MSM in Puerto Rico (N = 112)

	<i>n</i>	% of use	<i>p</i>	OR (95% CI)	aOR (95% CI)
Age (years)					
17–32	41	46.3	1	1	1
33–48	54	48.1		1.075 (0.477–2.425)	1.704 (0.659–4.406)
49+	17	70.6		2.779 (0.828–9.323)	3.379 (0.854–13.367)
Total	112	50.9	0.208		
Education					
High school or less	46	47.8	1	1	1
At least some college years	66	53.0		1.232 (0.580–2.618)	1.182 (0.500–2.797)
Total	112	50.9	0.588		
Employment					
Employed or student	63	61.9	1	1	1
Unemployed	49	36.7		0.357 (0.165–0.773)	0.314 (0.122–0.810)
Total	112	50.9	0.008		
Religion					
None	22	40.9	1	1	1
Roman Catholic	44	54.5		1.733 (0.615–4.887)	2.108 (0.652–6.815)
Protestant	34	52.9		1.625 (0.549–4.806)	1.697 (0.489–5.887)
Other	12	50.0		1.444 (0.351–5.947)	2.219 (0.454–10.842)
Total	112	50.5	0.759		
Partnership					
No primary partner	30	66.7		4.000 (1.367–11.703)	4.292 (1.310–14.068)
Don't know HIV status	16	62.5		3.333 (0.941–11.812)	2.049 (0.499–8.409)
Partner is HIV negative	36	47.2		1.789 (0.657–4.875)	2.215 (0.743–6.600)
Partner is HIV positive	30	33.3	1	1	1
Total	112	50.5	0.052		

Bold values indicate statistical significance ($p < 0.05$)

OR odds ratio, aOR adjusted odds ratio

Table 4

Sexual health knowledge stratified by selected variables in a sample of HIV-positive MSM in Puerto Rico ($N = 138$)

	<i>n</i>	<u>Knowledge score</u>	<i>p</i>	β (95% CI)	$a\beta$ (95% CI)
		<u>M</u>	<u>SD</u>		
Age (years)					
17–32	46	11.5	2.3	1	1
33–48	63	11.0	3.0	-0.506 (-1.558-0.547)	-0.304 (-1.365-0.758)
49+	29	11.0	2.8	-0.522 (-1.808-0.765)	-0.250 (-1.540-1.039)
Total	138	11.2	2.7	0.589	
Education					
High school or less	58	10.2	3.2	1	1
At least some years in college	80	11.9	2.1	1.651 (0.758-2.544)	1.328 (0.358-2.297)
Total	138	11.2	2.7	0.001	
Employment					
Employed or student	74	11.8	2.3	1	1
Unemployed	64	10.5	3.0	-1.241 (-2.143 to -0.339)	-1.009 (-2.024-0.005)
Total	138	11.2	2.7	0.007	
Religion					
None	28	11.4	2.3	1	1
Roman Catholic	56	11.0	3.0	-0.393 (-1.651-0.865)	-0.023 (-1.279-1.234)
Protestant	40	10.9	2.9	-0.479 (-1.818-0.860)	-0.176 (-1.542-1.190)
Other	14	11.9	1.9	0.500 (-1.279-2.279)	1.059 (-0.720-2.839)
Total	138	11.2	2.7	0.637	
Partnership					
No primary partner	51	10.8	2.6	-1.259 (-2.471 to -0.046)	-1.196 (-2.405-0.013)
Don't know HIV Status	16	11.1	2.3	-0.938 (-2.584-0.709)	-1.420 (-3.107-0.267)
Partner is HIV negative	39	11.0	3.5	-1.088 (-2.371-0.195)	-0.965 (-2.216-0.286)
Partner is HIV positive	32	12.1	1.9	1	1
Total	138	11.2	2.7	0.211	

Bold values indicate statistical significance ($p < 0.05$) β = Beta coefficient (simple linear regression), $a\beta$ adjusted beta coefficient (multiple linear regression)