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ORIGINAL PAPER

The Relationship Between HIV Risk, High-Risk Behavior, Religiosity, and Spirituality Among Black Men Who Have Sex with Men (MSM): An Exploratory Study

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Abstract Blacks in the USA, including black men who have sex with men (MSM), tend to have stronger religious and spiritual affiliations compared with other racial/ethnic populations. HIV and STD incidence rates continue to rise among Black MSM. Using data from the CDC Brothers y Hermanos (ByHS) project, this study examined correlations between high-risk behavior, e.g., substance use and high-risk sexual behavior (e.g., condom use history, unprotected sexual intercourse, HIV infection status, and STD infection status) religiosity, spirituality, age, among Black MSM ($N = 1141$). This exploratory study examined whether religiosity and spirituality were associated with high-risk behavior and high-risk sexual behavior among Black MSM. Religiosity and spirituality indices were compiled from the ByHS data. The religiosity index was significantly associated with HIV infection and use of cocaine, crack, and poppers as well as marginally associated with ecstasy use. Spirituality was significantly associated with HIV infection status, STD infection status, alcohol use, and crack use. Given these relationships, current and future HIV prevention models targeting Black MSM should consider the potential importance of the roles of religiosity and spirituality in the lives of Black MSM to increase the efficacy of risk reduction interventions.

Keywords HIV risk behavior and gay black men · Spirituality and Gay men · Religious black men and HIV risk · Spiritual Black gay men and high-risk behavior · Depression, substance abuse, religion, and black men

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Introduction

Blacks in the USA typically have strong associations with religion and religious institutions. A recent national survey of religious behaviors and beliefs found that, relative to other racial and ethnic groups, Blacks are more likely to report a formal religious affiliation (Glick and Golden 2010; Pew 2003, 2008; Pitt 2010). A high majority (85 %) of Blacks reported that religion is very important to them, and 60 % of Black individuals surveyed reported weekly or "regular" church attendance (Pew 2003, 2008). Among the Black individuals surveyed in a nationwide probability sample who reported no formal religious affiliation, 60 % indicated that religion was somewhat or very important in their lives (Pew 2008). Comparatively, 56 % of the general population reported that religion was very important to them, and 39 % reported weekly or regular church attendance (Pew 2003, 2008).

In addition to religious differences among racial groups, persistent differences concerning the acceptance of homosexuality appear to exist among different racial communities. Blacks tend to report more negative attitudes regarding homosexuality than Whites and other racial/ethnic groups (Glick and Golden 2010; Pitt 2010). In a recent survey, 85 % of Blacks endorsed homosexuality as sinful and reported generally unfavorable views regarding homosexual males (Pew 2008). Similarly, Glick and Golden (2010) found that 72.3 % of Blacks surveyed endorsed homosexuality as "always wrong," compared to 51.8 % of Whites. The study also found that this attitude toward homosexuality among Blacks was largely unchanged since the 1970s, but among White respondents, negative perceptions of homosexuality declined from 70.8 to 51.8 %. As described below, these attitudes concerning religion and homosexuality and higher levels of homophobia experienced by Black MSM versus other MSM may be a contributing factor to the increased incidence of HIV/AIDS risk behaviors and support the need for continuing research (Glick and Golden 2010; Jeffries et al. 2012; Pitt 2010).

Cognitive Dissonance and Sexual Risk Among Black MSM

The strong association of many Blacks with predominately Black religious institutions likely influences their attitudes regarding sexual norms (Pew 2008; Pitt 2010; Stokes and Peterson 1998; Yip 2002). Due to the negative attitudes of many Black churches regarding sex in general, and homosexuality in particular (Miller 2007; Wilson and Miller 2002), many Black MSM report finding themselves in conflict with and rejected by organized religious communities (Fullilove 2006; Miller 2007; Ross et al. 2008; Wilson and Miller 2002; Woodyard et al. 2000). Such conflicts and incongruities between key life areas can lead to a disconnection between religious identity and homosexual behavior. It is possible that Black MSM internalize the homonegative (judgmental) messages often present in their religious and larger community contexts, giving rise to dissonant self-perceptions that foster HIV-related risk (Glick and Golden 2010; Wilson and Miller 2002; Woodyard et al. 2000).

Due to stigma some black MSM may be less likely to be long-term monogamously partnered, less likely to arrive at high-risk locations with prevention supplies, and/or less likely to engage in safer sex practices, such as condom use (Millett et al. 2006; Murray et al. 2007). All of these risk behaviors are associated with increased risk of STIs, which are proxy measures for HIV risk behavior engagement and also independently may increase risk of HIV transmission (Beatty et al. 2004; CDC 2009).

Several studies also have found that the internalized barriers of stigma, shame, low self-esteem, and homophobia create an atmosphere of silence around MSM sexual behaviors and decrease the probability of Black MSM discussing high-risk sexual behaviors. This culture of silence can lessen the impact of HIV prevention education interventions (Jeffries et al. 2012; Martin and Knox 1997; Malebranche 2003). Some studies also have suggested that the internalization of religiously influenced homonegative messages contributes to lower self-efficacy regarding preventive sexual practices among this population (Martin and Knox 1997; Noar et al. 2009; Stokes and Peterson 1998). Thus, it is important to examine the association between religiosity and spirituality and high-risk sexual behavior among Black MSM.

Religiosity and Spirituality Among Black MSM

Although religion and spirituality as concepts often overlap and much research has found significant associations between the two (Horn et al. 2005; Ironson et al. 2006), "religion" typically refers to the formal set of beliefs and practices affiliated with an acknowledged religious authority and includes such overt visible acts as praying before meals, attending worship services, and reading sacred texts (Davis et al. 2003; Coyle 2002). "Spirituality" typically denotes a personal experience or feeling of connectedness with a higher being and typifies intrinsic unseen qualities appropriated to ones relationship with an otherness, higher power, or God. Spirituality can also include the search or path for transcendent meaning (Davis et al. 2003; Coyle 2002; Miller 2007).

Despite the unique role of religiosity and spirituality among Black MSM, research has not examined the relationships between these constructs and risk behaviors. The present study was exploratory in nature and was aimed at increasing understanding of population views and needs to enhance HIV prevention and intervention programs targeting Black MSM.

Methods

Description of the Data Sample

The present study used a subset of data from the 2005 Brothers y Hermanos Study (ByHS) conducted by the Centers for Disease Control and Prevention (CDC). Several factors make the ByHS an appropriate choice to address the specific aims of this project. First, the ByHS study was rigorously designed and assessed a broad range of relevant areas. ByHS used an audio computer-assisted self-interview (ACASI) that allowed private responding to solicit that most unbiased responses on sensitive questions (e.g., HIV risk, UAI, substance abuse). Second, the ByHS data set provides a very large sample ($N = 1140$) of Black MSM recruited from large urban areas. This sample will provide adequate statistical power to examine the specific aims. Third, the ByHS data set provides comprehensive data on HIV risk behaviors, HIV testing, and perceptions of HIV risk. The level of risk data obtained in this federally funded study exceeds that possible in most primary data collection by unfunded researchers. Fourth, the ByHS data set contains excellent quality data, with few missing data points. Fifth, the ByHS data set assesses many of the covariates of HIV risk identified in the literature (e.g., comprehensive substance use assessment, depression/mental health, social support). Sixth, the ByHS data set includes questions on both

religiosity and spirituality, although no studies using these data have been conducted from this data set.

ByHS collected a sample of 1141 Black MSM (601 from New York City and 540 from Philadelphia). Eligible ByHS participants were born male, were over age 18, and were sexually active with another male within the past 12 months (i.e., oral or anal sex, mutual masturbation with another male). Recruitment was open to participants who were HIV positive, HIV negative, and unknown HIV status (Marks et al. 2009). Data collection sessions were held in project offices in the CBO office spaces where participants were screened for eligibility, and written informed consent was obtained. Eligible participants completed an audio computer-assisted self-interview (ACASI) in English. The religiosity, spirituality, and high-risk behavior questions were all confidentially via the ACASI system.

Selection of the Data Set

The overall goal of the original ByHS study was to understand differences in undiagnosed HIV infection among Black MSM. The ByHS data set was selected for use in the present study as it is, to our knowledge, the only large data set ($N = 1154$) of Black MSM

Table 1 Participant characteristics of black men who have sex with men, Brothers y Hermanos Study, 2005–2006

	n/N	%
Ethnicity		
Black Hispanic	11/1141	1.0
Non-hispanic	1130/1141	99.0
Employment		
Full time	284/1137	25.0
Part time	284/1137	25.0
Unemployed	455/1137	40.0
Disabled	114/1137	10.0
Student status		
Full time	114/1137	10.0
Part time	171/1137	15.0
None	852/1137	75.0
Sexual orientation		
Heterosexual	114/1137	10.0
Homosexual	739/1137	65.0
Bisexual	255/1137	22.5
Other	29/1137	2.5
Marital status		
Married to female	28/1116	2.5
Divorced	84/1116	7.5
Single	268/1116	90.0
Health insurance		
None	114/1139	10.0
Medicaid	740/1139	65.0
Medicare	171/1139	15.0
Private	114/1139	10.0

respondents that assessed both religion and spirituality, as well as comprehensively assessing HIV status, risk behaviors, and associated variables.

Table 2 Independent variable characteristics presented with variable name, number, and corresponding percent of black men who have sex with men, Brothers y Hermanos Study, 2005–2006

	n/N	%		*n/N*	%
Worship (dichotomous)			**Worship (categorical)**		
Missing	5/1141	1.0	Missing	5/1141	1.0
Never	281/1141	25.0	Never	281/1141	25.0
Some	855/1141	74.0	Some	254/1141	22.0
			Monthly	350/1141	30.0
			Weekly	251/1141	22.0
Open about sexuality (dichotomous)			**Guidance from higher power**		
Missing	293/1141	26.0	Missing	4/1141	1.0
No	547/1141	48.0	No beliefs	57/1141	5.0
Yes	301/1141	26.0	Strongly agree	705/1141	62.0
			Agree somewhat	270/1141	24.0
			Disagree	48/1141	3.0
			Strongly disagree	57/1141	5.0
Open about sexuality (Likert scale)			**Spiritual connection**		
Missing	10/1141	1.0	Missing	66/1141	5.0
Strongly agree	144/1141	13.0	No beliefs	15/1141	1.0
Agree somewhat	157/1141	14.0	Strongly agree	618/1141	56.0
Disagree somewhat	124/1141	11.0	Agree somewhat	289/1141	26.0
Strongly disagree	423/1141	37.0	Disagree	84/1141	7.0
Don't have one	283/1141	25.0	Strongly disagree	69/1141	5.0
Religious beliefs and sex with men (Likert scale)			**Spirituality and health**		
Missing	10/1141	1.0	Missing	8/1141	1.0
No religious beliefs	159/1141	14.0	No beliefs	59/1141	5.0
Strongly agree	279/1141	24.0	Strongly agree	716/1141	63.0
Agree somewhat	169/1141	15.0	Agree somewhat	270/1141	24.0
Disagree somewhat	233/1141	20.0	Disagree	56/1141	5.0
Strongly disagree	291/1141	26.0	Strongly disagree	32/1141	2.0
Chooses religious beliefs versus sex with a man					
Missing	17/1141	1.0			
No religious beliefs	173/1141	15.0			
Strongly agree	383/1141	34.0			
Agree somewhat	185/1141	16.0			
Disagree somewhat	192/1141	17.0			
Strongly disagree	191/1141	17.0			

Please refer to Figs. 1 and 2. Religiosity questions were four: (1) worship, (2) openness about sexuality, (3) religious beliefs, and (4) choosing religious beliefs versus sex with men. The spirituality questions were three: (1) guidance, (2) spiritual connection, and (3) spirituality and health. Please refer to Tables 5 and 6 for the corresponding religiosity and spirituality headings (bolded above) with their respective questions

ByHS participants were recruited using respondent-driven sampling (RDS) (Heckathorn 1997), which is a variant of peer-to-peer chain-driven sampling method. Participants who did not self-disclose as HIV positive at intake were provided HIV counseling and testing (OraQuick oral swab); individuals testing preliminary positive for HIV infection received venipuncture blood confirmation testing and returned for results and posttest counseling. Participants were compensated $50 for completion of study procedures.

Description of the Sample of Participants

Table 1 shows the demographic characteristics of ByHS participants included in the present study. A majority of the sample identified as non-Hispanic Black and single/never married; over half identified as homosexual or gay. Nearly half were unemployed, and educational attainment ranged from non-high-school graduate to doctoral level (mean educational level was high-school graduate/GED). Average participant age was 41.5 years (range 18–71, SD = 9.63).

Measures (Religiosity, Spirituality, HIV Risk)

Dependent Variables

The dependent variables were religiosity, and spirituality. Measures for these variables religiosity (4 questions) and spirituality (3 questions) are presented with scale responses as noted in Table 2.

Outcome Variables

This exploratory study examined relationships among sexual risk (unprotected sex, HIV infection, STD infection) and other high-risk behavior variables (substance use) and religiosity and spirituality (Table 3).

A religiosity index was created (Hsueh-Sheng 2012) by summing the scale responses of the four religiosity questions from the ByHS data: worship (0–4) + openness (0–4) + religious beliefs (0–4) + choosing religious beliefs (0–4) to develop a composite sum of the responses to the four original ByHS religiosity questions. Figure 1 shows the total number of responses for each number and its corresponding percentages.

Similarly, a spirituality index was created by using participant responses to three questions by summing guidance (0–4) + spiritual connection (0–4) + spirituality and health (0–4). Spirituality responses are noted in Fig. 2

Analysis

Procedures to Identify Correlations of Religiosity and Spirituality

To examine which risk and demographic variables were significantly correlated with both religiosity and spirituality, a correlation matrix demographic and risk variables (i.e., unprotected anal intercourse (UAI), both receptive and insertive, condom use history, HIV infection status, and STD infection status) was created, and Pearson correlations were examined along with the corresponding p values and reported in Table 4.

Table 3 Risk variable characteristics of black men who have sex with men, Brothers y Hermanos Study, 2005–2006

	n/N	%		*n/N*	%
Condom use history			Crack use		
Missing	2/1141	2.0	Missing	2/1141	1.0
No	761/1141	67.0	No	757/1141	66.0
Yes	378/1141	31.0	Yes	382/1141	33.0
Receptive anal sex			Ecstasy use		
Missing	558/1141408/	49.0	Missing	2/1141	2.0
No	1141	36.0	No	1105/1141	96.0
Yes	175/1141	15.0	Yes	34/1141	3.0
Insertive anal sex			Marijuana use		
Missing	558/1141	49.0	Missing	2/1141	1.0
No	297/1141	26.0	No	611/1141	53.0
Yes	286/1141	25.0	Yes	528/1141	46.0
STD infection (ever diagnosed)			Heroin use		
Missing	0/1141	0.0	Missing	2/1141	1.0
No	378/1141	33.0	No	1098/1141	96.0
Yes	763/1141	67.0	Yes	41/1141	3.0
HIV infection status			Poppers use		
Missing	13/1141	1.0	Missing	2/1141	1.0
Negative/non-infection	538/1141	47.0	No	1013/1141	88.0
Positive/infected	590/1141	52.0	Yes	126/1141	11.0
Cocaine use			Non-prescription		
Missing	3/1141	1.0	Missing	2/1141	1.0
No	369/1141	66.0	None	398/1141	33.0
Yes	769/1141	33.0	One	276/1141	24.0
Alcohol use			Two	235/1141	20.0
Missing	3/1141	1.0	Three	173/1141	15.0
No	394/1141	34.0	Four	39/1141	3.0
Yes	744/1141	65.0	Five	15/1141	2.0
Binge alcohol use			Six	2/1141	1.0
Missing	397/1141	35.0	Seven	2/1141	1.0
None	137/1141	12.0			
Daily	60/1141	5.0			
Weekly	285/1141	25.0			
Monthly	199/1141	18.0			
>Monthly	63/1141	5.0			
Methamphetamine use					
Missing	4/1141	4.0			
No	1102/1141	96.0			
Yes	35/1141	3.0			

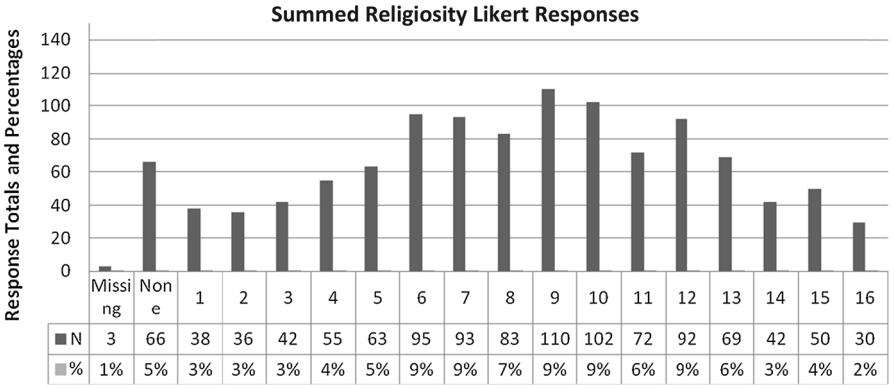

Fig. 1 Religiosity index responses with corresponding *N*, and percent from participants

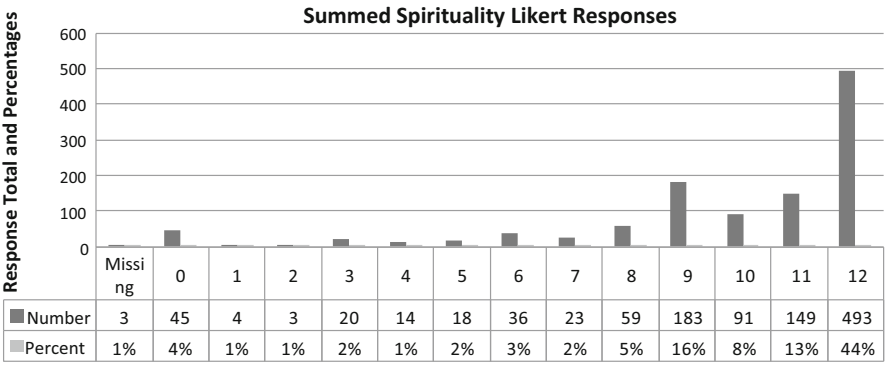

Fig. 2 Spirituality index responses with corresponding *N*, and percent from participants

Table 4 Correlations with religiosity and spirituality indices

Variable	Religiosity	95 % confidence interval	Spirituality	95 % confidence interval
Age	0.1257	(0.068, 0.183)	0.0629	(0.005, 0.121)
HIV infection status	−0.1243	(−0.182, −0.066)	0.1792	(0.122, 0.235)
STD infection ever status	−0.0073	(−0.065, 0.051)	0.0986	(0.041, 0.156)
Unprotected insertive anal intercourse	−0.0008	(−0.082, 0.081)	−0.0578	(−0.139, 0.024)
Unprotected receptive anal intercourse	−0.0324	(−0.114, 0.049)	0.0433	(−0.038, 0.124)
Unprotected casual sex	0.0226	(−0.036, 0.081)	−0.0181	(−0.076, 0.040)
Non-prescription substance use	0.0372	(−0.021, 0.095)	−0.0487	(−0.107, 0.010)

Higher values indicate stronger relationship between variables

Negative values indicate reciprocal or inverse relationships between variables

A series of ANOVAs were conducted to examine the relationship between age and religiosity as well as age and spirituality. Both religiosity ($F[1, 1134] = 18.20, p < 0.0001$) and spirituality ($F[1, 1134] = 4.50, p = 0.0342$) were significantly positively associated with age.

To further analyze the risk variables associated with religiosity and spirituality, the Chi-square (χ^2) and corresponding p value for each statistically significant risk variable were computed and are reported in Tables 5 and 6. These tables include the individual religiosity and spirituality index subquestions as well and the corresponding p values.

Results

The correlation between religiosity and spirituality was 0.1634 ($p < 0.0001$); however, these were significantly associated with different risk variables indicating that they are distinct constructs.

Religiosity Religiosity was significantly associated with age ($r = 0.1331$, $p < 0.0001$), cocaine use ($r = 0.0978$, $p = 0.0010$), and crack use ($r = 0.1128$, $p = 0.0001$), and significantly negatively associated with ecstasy use ($r = -0.0617$, $p = 0.0375$), poppers use ($r = -0.0698$, $p = 0.0185$), and HIV infection status ($r = -0.1352$, $p = <0.0001$). The religiosity index was positively, but nonsignificantly, associated with non-prescription substance use. Nonsignificant negative associations were found between the religiosity index and both unprotected receptive and insertive anal intercourse.

Table 5 Chi-square and p values of religiosity associated with risk variables

Religiosity questions	Question	Risk variables (*df*, *N* %, *p* value)				
		HIV infection	Cocaine use	Crack use	Poppers use	Ecstasy use
Worship	How often have you attended a place of worship (e.g., church, temple, mosque) during the past 6 months other than for a wedding or funeral?	**1121, 1123 99 % 0.0066**	**1123, 1125 99 % 0.0015**	1133, 1135 99 % 0.3222	1133, 1135 99 % 0.1060	**1121, 1123 99 % 0.0292**
Open about sexuality	I am able to be open about my sexuality in my religious community	**838, 840 99 % <0.0001**	**845, 847 99 % 0.0335**	**845, 847 99 % <0.0001**	845, 847 99 % 0.0959	845, 847 99 % 0.7169
Religious beliefs and sex with men	My religious beliefs make me feel bad about having sex with other men	**838, 840 99 % <0.0001**	**1116, 1118 99 % <0.0001**	**1128, 1130 99 % 0.0015**	**1128,1130 99 % 0.0256**	1128, 1130 99 % 0.0109
Choose religious beliefs versus sex with man	I often have to choose my religious beliefs over my desire to be with a man	**838, 840 99 % <0.0001**	**1128,1130 99 % 0.0072**	**1121, 1123 99 % 0.0002**	1121,1123 99 % 0.3599	**1121,1123 99 % 0.0292**
Total religiosity index		**1123, 1125 99 % <0.0001**	**1135, 1137 99 % 0.0013**	**1135,1137 99 % <0.0001**	**1135,1137 99 % 0.033**	**1135,1137** ** **99 % 0.0661**

Bolded values represent statistically significant relationships (i.e., p values <0.05)

Bold and ** indicates marginally statistically significance (p value <0.07)

Table 6 Chi-square and p values of spirituality associated with risk variables

Question header	Question	Risk variables (*df*, *N* %, *p* value)				
		HIV infection	STD infection	Alcohol use	Cocaine use	Crack use
Guidance from higher power	I always seek guidance from a higher power in times of need	**1122, 1124 99 % <0.0001**	**1135, 1137 99 % 0.0025**	**1134, 1136** ** **99 % 0.0604**	**1134, 1136 99 % <0.0001**	1134, 1136 99 % 0.1827
Spiritual connection	My spiritual connection with a higher power helps me cope with negative beliefs that other people have about homosexuality	**1062, 1064 99 % <0.0001**	**1073, 1075 99 % <0.0001**	**1072, 1074 99 % 0.0038**	1072, 1074 99 % 0.1923	**1072, 1074 99 % 0.0022**
Spirituality and health	My spiritual beliefs encourage me to do everything I can to stay healthy	**1118, 1120 99 % <0.0001**	**1131, 1133 99 % 0.0074**	**1130, 1132 99 % 0.0134**	**1130, 1132 99 % 0.3080**	**1130, 1132 99 % 0.1837**
Total spirituality index		**1123, 1125 99 % <0.0001**	**1136, 1138 99 % <0.0001**	**1135, 1137 99 % 0.0093**	1135,1137 99 % 0.2901	**1135, 1137 99 % 0.0296**

Bolded values represent statistically significant relationships (i.e., p values <0.05)

Bold and ** indicates marginally statistically significance (p value <0.07)

Chi-square analysis of the religiosity index and various risk variables found that the religiosity index was significantly associated with HIV infection χ^2 [(1123, $N = 1125$) = 17.51, $p = <0.0001$], cocaine use χ^2 [(1135, $N = 1137$) = 10.29, $p = 0.0013$], crack use χ^2 (1135, $N = 1137$) = 14.60, $p = <0.0001$], poppers use χ^2 [(1135, $N = 1137$) = 4.52, $p = 0.0330$], and marginally associated with ecstasy use χ^2 [(1135, $N = 1137$) = 3.38, $p = 0.0661$].

Spirituality The spirituality index was positively associated with STD infection status ($r = 0.0829$, $p = 0.0051$), and HIV infection status ($r = 0.1900$, $p = <0.0001$), and negatively associated with receptive anal intercourse ($r = -0.0835$, $p = 0.0443$), unprotected anal intercourse ($r = -0.0684$, $p = 0.0212$), alcohol use ($r = -0.1245$, $p = <0.0001$), cocaine use ($r = -0.0719$, $p = 0.0153$), and crack use ($r = -0.1164$, $p = <0.0001$). Chi-square analysis found significant associations between the spirituality index and HIV infection status χ^2 [(1123, $N = 1125$) = 36.98, $p = <0.0001$], STD infection status χ^2 [(1136, $N = 1138$) = 10.73, $p = <0.0001$], alcohol use χ^2 [(1135, $N = 1137$) = 30.11, $p = 0.0093$], and crack use χ^2 [(1135, $N = 1137$) = 4.73, $p = 0.0296$].

Discussion

Religiosity and spirituality were significantly associated with various high-risk behaviors among Black MSM. Although religiosity and spirituality were strongly associated, their pattern of relationships with other variables was different, suggesting that the two are related, but distinct, constructs.

More religious Black MSM tended to report cocaine and crack use and were more likely to be HIV negative and to participate less in unprotected receptive anal intercourse. This pattern of results suggests a complex relationship between risk and protective factors and HIV infection in this sample. As found in other studies, Rasic et al. (2011), and Cotton et al. (2006), religiosity was significantly negatively associated with certain substance use, such as poppers and ecstasy, and may promote less use of these substances among Black MSM. Religiosity among Black MSM who use crack and cocaine was associated with higher levels of risky behavior as found in other studies and may increase risk of HIV and STD infection (Klobin et al. 2006; Parsons et al. 2012; Reisner et al. 2009; Stall et al. 2003). These men may have higher levels of dissonance, which in keeping with our theory may account for the high-risk behavior.

Similarly, in other studies (Davis et al. 2003; Hampton et al. 2010), MSM who reported a higher degree of spirituality also tended to be HIV infected, and in this study they also tended to report ever having an STD. Given a lack of ability to denote a temporal association in this study, Black MSM's level of spirituality could have increased upon HIV or STD infection occurred explaining the positive association between spirituality and these constructs.

Spirituality was negatively associated with unprotected anal sex, receptive anal intercourse, alcohol use, cocaine use, and crack use. As in other research (Murray et al. 2007; Wutoh et al. 2011), which found that increased levels of spirituality corresponded to decreased levels of certain risky behaviors, this study found that among Black MSM, spirituality might be protective of unprotected insertive anal intercourse, unprotected casual sex, and non-prescription substance use. One possible inference is that these men may have achieved a level of cognitive consonance, accounting for these differences in behavior.

HIV infection status or STD infection status is not a risk behavior; however, Black MSM who were infected did participate in high-risk behaviors including having unprotected sex with a partner whose HIV infection status was unknown.

Given that religiosity may discourage the use of poppers and ecstasy, and spirituality might discourage the practice of unprotected receptive anal intercourse, unprotected anal intercourse, and the use of alcohol, crack, and cocaine, current and future HIV prevention models targeting Black MSM might incorporate religiosity and spirituality to increase the efficacy of high-risk reduction outcome measures.

Limitations

First, the use of a cross-sectional study design introduces the possibility of measured and unmeasured confounding factors, and causality cannot be inferred from the associations presented in this study. Second, the ByHS survey relied on participant self-report of risk behaviors, as well as the religiosity and spirituality questions, and so responses may not accurately reflect the true risk behaviors or an accounting of religious and spirituality behaviors although collected by confidential computer-assisted methods. The religiosity and spirituality questions were combined and measured independently of self-report Third, although cognitive dissonance and consonance and their relationships with religiosity and spirituality, formed the theoretical framework of the study, the data set did not allow direct measurement of consonance or dissonance. Fourth, while religiosity and spirituality among HIV-infected individuals is reported, the cross-sectional data set does not allow assumptions regarding whether these levels changed with HIV infection status. Better understanding temporal relationships between HIV infection status and religiosity and

spirituality is an important avenue for future research. Finally, the religiosity/spirituality items available in the ByHS data set are not part of standardized scales. This limits comparisons of findings from this study to other studies that have relied on standardized religiosity/spirituality measures. However, past research has not identified gold-standard religiosity/spirituality scales (Johnstone et al. 2009), and no standardized measures have been used with Black MSM.

Summary

This exploratory study found that religiosity and spirituality are constructs important and significantly associated with certain high-risk behaviors among Black MSM. This paper illustrates which variables are significantly associated with these constructs. Given the relationships between religiosity and spirituality and certain high-risk behaviors among Black MSM, future risk reduction interventions may achieve increased efficacy by incorporating these constructs in the design, development, and implementation of behavioral models for Black MSM. The relationships identified in this paper support the value of further study of the potential roles of the religiosity and spirituality constructs in risk behaviors among Black MSM. Such developmental work is necessary for incorporation into tailored risk reduction programs for this underserved, high-risk population.

Future Implications

Given that HIV infection rates continue to increase among Black MSM and that other social and cultural factors account for the new incidence among this population, this study used a theoretical framework of cognitive dissonance theory to guide the direction of the research and found religiosity and spirituality to be significantly associated with high-risk behaviors among Black MSM. Religiosity may be associated with more dissonance among Black MSM and may promote more crack and cocaine use, and spirituality may be associated with cognitive consonance and may decrease the practice of unprotected anal intercourse and use of alcohol, crack, and cocaine among Black MSM. Future studies and health behavior theories should consider incorporating these constructs in the design and testing of risk reduction interventions for this population.

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