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Black Men Who Have Sex with Men
(MSM)*

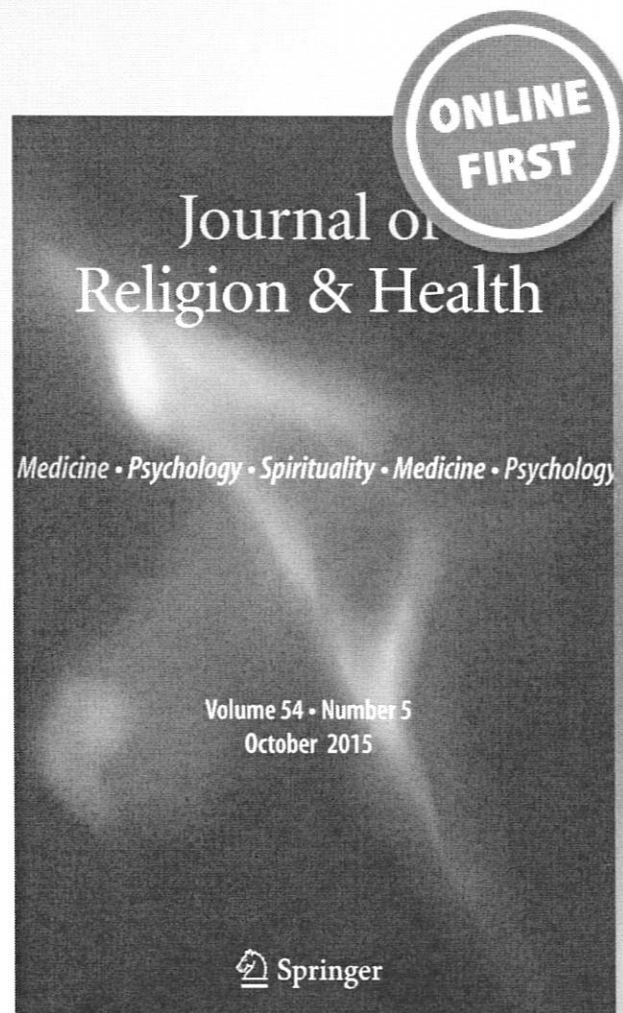
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The Relationship of Religiosity, Spirituality, Substance Abuse, and Depression Among Black Men Who Have Sex with Men (MSM)

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Abstract HIV infection rates continue to disproportionately affect Black men who have sex with men (Black MSM) compared to other groups. Research has shown that higher rates of substance use and higher levels of depression are positively correlated with higher sexual risk behavior, and little research has examined relationships between high levels of religiosity and spirituality prevalent in Black culture and issues of substance use and depression among Black MSM. This study did just that and found a relationship between religiosity, spirituality, and risk behavior. These relationships suggest that future HIV prevention models might incorporate religiosity and spirituality to increase the efficacy of risk reduction interventions for Black MSM.

Keywords Black men who have sex with men (Black MSM) · Religiosity · Spirituality · Depression · Substance abuse

Introduction

The relationship between substance use and depression for men who have sex with men and particularly Black men who have sex with men (Black MSM) is clearly a multifaceted issue. Several studies (Reisner et al. 2009; Cochran and Mays 2000; Meyer et al. 2008) found higher rates of depression among MSM compared to the general adult male population, with rates of 15 to 26 % for MSM compared to 5–12 % for the general adult male population. With respect to Black MSM, rates of depression among Black MSM were

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33 % higher (Reisner et al. 2009) when compared to depression rates among heterosexual Black men and other MSM populations (Cochran and Mays 1994; Peterson et al. 1996).

Moreover, higher rates of depression have been positively associated with higher levels of sexual risk behavior among Black MSM (Alvy et al. 2011; Crawford et al. 2002; Perdue et al. 2003; Stall et al. 2003). Research found that depression predicted high-risk behavior among a subsample of Black MSM and Black man who have sex with women (MSM/W). For example, Alvy et al. (2011), Klobin et al. (2006), and Stall et al. (2003) reported positive associations with depression and high-risk behavior among MSM. These studies found positive relationships in both HIV-infected and HIV-uninfected participants (Klobin et al. 2006; Reisner et al. 2009; Stall et al. 2003). Similarly, Reisner et al. (2009) reported that Black MSM who reported unprotected anal sex were nine times as likely compared with other MSM to be depressed, and those diagnosed with an STI were six times compared with other MSM as likely to be depressed.

Research has also shown a positive association between substance use and high-risk behavior among MSM regardless of HIV serostatus (Boone et al. 2012; Bruce et al. 2012; Klobin et al. 2003; VanDevanter et al. 2010). Studies found that methamphetamine, cocaine, and alcohol use are the primary substances most associated with high-risk behavior among MSM (Bruce et al. 2012; Coalfax et al. 2005; Garofalo et al. 1998; Mustanski 2008). In a recent literature review analyzing event-level substance use immediately before or during a sexual encounter among MSM, Vosburgh et al. (2012) found methamphetamine use and binge alcohol use to be most likely associated with unprotected sexual behavior.

The degree to which religious beliefs or spirituality buffer depressive symptoms or substance use has been examined in prior research, although none with separate analyses for Black MSM. Rasic et al. (2011) found that religiosity was associated with lower odds of depression and higher rates of religious attendance were associated with lower rates of depression (protective) among a sample of 1615 adolescents. Similarly, Cotton et al. (2006) found that among 134 adolescents, higher levels of spirituality were associated with fewer depressive symptoms and so an inverse relationship between depression and spirituality was found. With regard to substance use, another study among college students found that those with higher spirituality and religiosity scores reported the lowest level of substance use (Dennis et al. 2009). Similarly, Piko and Fitzpatrick (2004) found religion to be protective in regard to alcohol use among adolescent participants.

Because Blacks in the USA typically have a strong association with religion and religious institutions compared to other racial and ethnic groups, understanding how religiosity and spirituality may interact with depression and substance use in increased HIV risk behaviors among Black MSM is a critically important issue. 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 2008; Pitt 2010; Wilson et al. 2011) and to report that "homosexuality is always wrong." Black MSM in the sample were more likely than White MSM to report that "homosexuality is always wrong," and men in the sample who reported that homosexuality is always wrong were more likely to refrain from HIV testing.

Other studies similarly suggests that religiosity is associated with cognitive dissonance among Black MSM (Kegeles et al. 2009) which is associated with higher rates of substance use, and depression (Mahaffy 1996; Martin and Knox 1997; Miller 2007; Millett and Peterson 2007; Millett et al. 2006).

This paper examines relationships between substance abuse, depression, and religious and spiritual factors among Black MSM.

Methods

Description of the Data Sample

The present study used a subset of data from the CDC 2005 Brothers y Hermanos Survey (ByH). ByH is a sample of 1141 Black MSM (601 from New York City and 540 from Philadelphia). As described in the methods published by Watkins et al. (2013), the ByH identified participants with an average age of the participants was 41.5 years ranging from ages 18–71. The number and corresponding percentages of the participants' characteristics are shown in Table 1. All variables were normally distributed. As Table 1 shows, the vast majority of the sample was identified as non-Hispanic Black, single/never married, and homosexual or gay. Education and employment were more variable, with the typical educational attainment being high school graduate. The average annual income of the participants was below the Federal poverty level. Most were insured, and approximately half reported currently being in a committed relationship.

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

	<i>n/N</i>	%
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

Measures

Predictor Variables

This study examined polysubstance use as alcohol use along with eight other illicit substances as well as depression reported as “ever been depressed” and expressed as dichotomous depression, and days respondents have been depressed, which is expressed as a continuous depression measure. Polysubstance use and depression are reported in Table 2.

Outcome Variables

The outcome variables were the following: religiosity, which consisted of four questions; and spirituality which consisted of three questions. These measures were presented with number and percentage as noted in Table 3.

In an effort to better analyze the religiosity outcome variable, a new index “Religiosity” was created as a sum of the scale responses: sum of the worship + openness + religious beliefs + choosing religious beliefs. A religiosity index was created (Wu 2012) by summing the scale responses of these four questions 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 ByH religiosity questions.

An index was created (Wu 2012) by summing guidance (0–4) + spiritual connection (0–4) + spirituality and health (0–4) as noted in Table 3 with corresponding number and percentages.

Univariate and bivariate associations were examined along with spirituality and religiosity. For both religiosity and spirituality, Spearman’s associations were conducted between the individual substance use and nonprescription substance use, depression (continuous) and depression (dichotomous) variables, in an effort to ascertain the individual relationships between the existence of depression and the level of depression and religiosity and spirituality. To examine which risk variables were significantly correlated with both religiosity and spirituality, this study utilized a correlation matrix of previously identified risk variables derived from the literature. Univariate comparisons were made between religiosity, spirituality, age, race, socioeconomic status, etc. Nonprescription substance use, unprotected anal intercourse (UAI), both receptive and insertive, condom use, HIV infection status, and STD infection status were used as high-risk variables to examine the relationship between the religiosity and spirituality variables. Previously identified risk variables were identified through a series of Chi-square tests, between risk as outcomes and religiosity (Table 5) and spirituality (Table 6) as independent variables. A Spearman’s correlation was used to examine whether religiosity and spirituality were significantly correlated with the risk variables (as noted in Table 4).

Results

Description of the Data Sample

The Brothers y Hermanos Study (ByH) conducted by the Centers for Disease Control and Prevention (CDC) ByH collected a sample of both Black and Latino MSM, including 1154 Black MSM (601 from New York City, NY, and 540 from Philadelphia, PA). Eligibility

Table 2 Substance abuse variables of Black men who have sex with men, Brothers y Hermanos Study, 2005–2006

	<i>n/N</i>	%
Cocaine use		
Missing	3/1141	1.0
No	369/1141	66.0
Yes	769/1141	33.0
Alcohol use		
Missing	3/1141	1.0
No	394/1141	34.0
Yes	744/1141	65.0
Binge alcohol use		
Missing	397/1141	35.0
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
Depression (within the last week)		
Missing	3/1141	1.0
None	179/1141	15.0
1–2 days	387/1141	34.0
3–6 days	265/1141	23.0
>6 days	308/1141	27.0
Depression (within the last 30 days)		
Never	182/1141	15.8
1–2 days	390/1141	33.9
3–6 days	266/1141	23.1
7–10 days	149/1141	12.9
11–20 days	73/1141	6.3
21–30 days	42/1141	3.7
Over 30 days	50/1141	4.3
Crack use		
Missing	2/1141	1.0
No	757/1141	66.0
Yes	382/1141	33.0
Ecstasy use		
Missing	2/1141	2.0
No	1105/1141	96.0
Yes	34/1141	3.0

Table 2 continued

	<i>n/N</i>	%
Marijuana use		
Missing	2/1141	1.0
No	611/1141	53.0
Yes	528/1141	46.0
Heroin use		
Missing	2/1141	1.0
No	1098/1141	96.0
Yes	41/1141	3.0
Poppers use		
Missing	2/1141	1.0
No	1013/1141	88.0
Yes	126/1141	11.0
Nonprescription		
Missing	2/1141	1.0
None	398/1141	33.0
One	276/1141	24.0
Two	235/1141	20.0
Three	173/1141	15.0
Four	39/1141	3.0
Five	15/1141	2.0
Six	2/1141	1.0
Seven	2/1141	1.0

criteria for ByH participants were as follows: being a biological male at birth and during the study, 18 years of age or older, a resident of their respective cities for at least the past 18 months, and being sexually active with another male (i.e., oral or anal sex, mutual masturbation) within the past 12 months. Recruitment was open to participants who were HIV-positive, HIV-negative, and unknown HIV status.

As noted in Table 4, religiosity was negatively associated with ecstasy and poppers use and positively associated with cocaine and crack use. Spirituality was significantly negatively associated with alcohol, cocaine, and crack use among Black MSM.

Conducting Chi-Square tests to examine religiosity (Table 5) and spirituality (Table 6) as indices as well as their individual subcomponent questions were examined with both of the depression variables, crack, cocaine, and alcohol use variables. The religiosity index was significantly associated with depression (last week), cocaine use, crack use; poppers use, and marginally associated with ecstasy use.

The spirituality index was significantly associated with both alcohol and crack use, but not significantly associated with either depression variable (Table 6).

A series of logistic regression analysis were conducted to ascertain the significant associations between the depression (past week and past month), substance use, and religiosity and spirituality variables. Among Black MSM, religiosity was significantly positively associated with use of cocaine (OR 0.95, $p = .0013$) and crack (OR 0.94, $p = 0.0001$), and negatively associated with the use of poppers (OR -1.05 , $p = 0.0334$). Spirituality was negatively associated with alcohol use (OR -1.06 , $p = 0.0093$) and with

Table 3 Outcome variable characteristics presented with variable name, number, and corresponding percent of Black men who have sex with men, Brothers y Hermanos Study, 2005–2006

	<i>n/N</i>	%
Worship (dichotomous)		
Missing	5/1141	1.0
Never	281/1141	25.0
Some	855/1141	74.0
Open about sexuality (dichotomous)		
Missing	293/1141	26.0
No	547/1141	48.0
Yes	301/1141	26.0
Open about sexuality (Likert scale)		
Missing	10/1141	1.0
Strongly agree	144/1141	13.0
Agree somewhat	157/1141	14.0
Disagree somewhat	124/1141	11.0
Strongly disagree	423/1141	37.0
Do not have one	283/1141	25.0
Religious beliefs and sex with men (Likert scale)		
Missing	10/1141	1.0
No religious beliefs	159/1141	14.0
Strongly agree	279/1141	24.0
Agree somewhat	169/1141	15.0
Disagree somewhat	233/1141	20.0
Strongly disagree	291/1141	26.0
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
Worship (categorical)		
Missing	5/1141	1.0
Never	281/1141	25.0
Some	254/1141	22.0
Monthly	350/1141	30.0
Weekly	251/1141	22.0
Guidance from higher power		
Missing	4/1141	1.0
No beliefs	57/1141	5.0
Strongly agree	705/1141	62.0
Agree somewhat	270/1141	24.0
Disagree	48/1141	3.0
Strongly disagree	57/1141	5.0

Table 3 continued

	<i>n/N</i>	%
Spiritual connection		
Missing	66/1141	5.0
No beliefs	15/1141	1.0
Strongly agree	618/1141	56.0
Agree somewhat	289/1141	26.0
Disagree	84/1141	7.0
Strongly disagree	69/1141	5.0
Spirituality and health		
Missing	8/1141	1.0
No beliefs	59/1141	5.0
Strongly agree	716/1141	63.0
Agree somewhat	270/1141	24.0
Disagree	56/1141	5.0
Strongly disagree	32/1141	2.0

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

Table 4 Spearman's associations and *p* values associated with religiosity and spirituality variables

Religiosity			Spirituality		
Variable	Spearman's (ρ)	<i>P</i> value	Variable	Spearman's (ρ)	<i>P</i> value
Ecstasy use	−0.0617	0.0375	Alcohol use	−0.1245	<0.0001
Poppers use	−0.0698	0.0185	Cocaine use	−0.0719	0.0153
Cocaine use	0.0978	0.0010	Crack use	−0.1164	<0.0001
Crack use	0.1128	0.0001			
Depression (within 30 days)	0.0038	0.8974*	Depression (within 30 days)	−0.0225	0.4494*
Depression (last week)	0.0018	0.9509*	Depression (last week)	−0.0230	0.4392*

Higher values indicate stronger relationship between variables

Negative values indicate reciprocal or inverse relationships between variables

* Nonsignificant *p* values included to illustrate relationship between significant ($p < 0.05$) and non-significant ($p > 0.05$) associations with substance use, depression, religiosity, and spirituality

crack use (OR −1.05, $p = 0.0296$). The spirituality index was not significantly associated with either depression variable (Table 6).

We also examined the associations between depression, substance use, using religiosity, and spirituality as outcome variables.

Spirituality was not significantly associated with the nonprescription substance use or depression, neither continuous nor categorical variables. However, when the spirituality variable was examined with the individual substances, there were significant negative associations between crack and cocaine use, and alcohol use. A simple logistic regression analysis model was conducted to further demonstrate the significant associations with the

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

Religiosity questions	Question	Risk variables (<i>df</i> , <i>N</i> %, <i>p</i> value)				
		Depression (last week)	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	1123, 1125	1133, 1135	1133, 1135	1121, 1123
		99 %	99 %	99 %	99 %	99 %
Open about sexuality	I am able to be open about my sexuality in my religious community	0.0066	0.0015	0.3222	0.1060	0.0292
		838, 840	845, 847	845, 847	845, 847	845, 847
Religious beliefs and sex with men	My religious beliefs make me feel bad about having sex with other men	99 %	99 %	99 %	99 %	99 %
		<0.0001	0.0335	<0.0001	0.0959	0.7169
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	1116, 1118	1128, 1130	1128, 1130	1128, 1130
		99 %	99 %	99 %	99 %	99 %
Total Religiosity Index		<0.0001	<0.0001	0.0015	0.0256	0.0109
		838, 840	1128, 1130	1121, 1123	1121, 1123	1121, 1123
		99 %	99 %	99 %	99 %	99 %
		<0.0001	0.0072	0.0002	0.3599	0.0292
		1123, 1125	1135, 1137	1135, 1137	1135, 1137	1135, 1137**
		99 %	99 %	99 %	99 %	99 %
		<0.0001	0.0013	<0.0001	0.033	0.0661
		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

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

Bold and ** indicate marginal statistical significance (*p* value <0.07)

Table 6 Chi-square and *p* values of spirituality associated with depression and substance use variables

Question header	Question	Risk variables (<i>df</i> , <i>N</i> %, <i>p</i> value)				
		Depression (last 30 days)	Depression (within last week)	Alcohol use	Cocaine use	Crack use
Guidance from higher power	I always seek guidance from a higher power in times of need	1133, 1135 99 %	1133, 1135 99 %	1134, 1136** 99 %	1134, 1136 99 %	1134, 1136 99 %
Spiritual connection	My spiritual connection with a higher power helps me cope with negative beliefs that other people have about homosexuality	0.5523	0.6444	0.0604	<0.0001	0.1827
		1072, 1074 99 %	1072, 1074 99 %	1072, 1074 99 %	1072, 1074 99 %	1072, 1074 99 %
Spirituality and health	My spiritual beliefs encourage me to do everything I can to stay healthy	0.3791	0.7474	0.0038	0.1923	0.0022
		1130, 1132 99 %	1130, 1132 99 %	1130, 1132 99 %	1130, 1132 99 %	1130, 1132 99 %
Total spirituality index		0.9779	0.6679	0.0134	0.3080	0.1837
		1134, 1136 99 %	1134, 1136 99 %	1135, 1137 99 %	1135, 1137 99 %	1135, 1137 99 %
		0.8463	0.6302	0.0093	0.2901	0.0296

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

Bold and ** indicate marginal statistical significance (*p* value <0.07)

spirituality variable along with depression, both continuous and categorical, in an effort to ascertain whether diagnoses of depression or level of depression were related to religion and spirituality as well as nonprescription substance use, and the interaction variable of nonprescription substance use and depression.

Discussion

Religiosity and spirituality were associated with substance use among Black MSM. Black MSM with higher religiosity scores also tended to report more use of crack, cocaine, and poppers as well as report being depressed in the past week. Those Black MSM with higher spirituality scores reported less use of alcohol and crack and cocaine. Spirituality was not significantly associated with ever being depressed or being depressed in the last week.

When depression was examined along with polysubstance use as they relate to religiosity and spirituality, there were significant associations present. Specifically, Black MSM who reported being depressed and using cocaine (both crack and powder) had higher religiosity scores. Black MSM who were depressed and using substances had higher overall religiosity scores. Black MSM with higher spirituality scores tended to report no depression and less substance use. Age was not significantly associated with depression or substance use among Black MSM.

Consistent with the hypothesis, an explanation could be that Black MSM who reported higher religiosity scores also abused more substances and had higher rates of depression typifying higher levels of cognitive dissonance such that religiosity seemed was associated with higher rates of substance abuse and depression report and higher risky behavior (Alvy et al. 2011; Reisner et al. 2009, Parsons et al. 2012). As found in Rasic et al. (2011), religiosity proved protective among certain Black MSM who reported no depressive symptoms, as they had lower rates of substance use and higher religiosity scores.

Black MSM with higher spirituality scores reported less crack and alcohol use. Spirituality scores were not significantly changed among those who reported using substances or being depressed. There were no significant differences in spirituality scores among Black MSM who reported being depressed or those who were both using substances and were depressed. One possible explanation is that many of the Black MSM surveyed identified as spiritual, and those Black MSM that reported using substances or being depressed had lower spirituality scores.

In this study, Black MSM who reported higher levels of spirituality experienced lower levels of substance use such that spirituality seemed to be a protective factor for these individuals, therefore mitigating risky behavior (Reisner et al. 2009). This finding is consistent with current research which found that Black MSM who report lower levels of depression and substance abuse tend to participate in less risky behavior (Alvy et al. 2011; Reisner et al. 2009).

Although religiosity and spirituality were highly correlated, they were correlated with distinct variables, and they were associated with different patterns of individual substance use, indicating that they are distinct but related constructs. Few studies have attempted to parse out differences among religiosity and spirituality variables, and such research is almost nonexistent among Black MSM. Understanding how these variables relate, and differ, is an important avenue for future research.

Considering the relationships found in this study of religiosity, spirituality, and substance use among Black MSM, namely that those individuals who had higher spirituality

scores reported fewer instances of polysubstance abuse and depression, while those with higher religiosity scores reported more instance of polysubstance abuse and depression, a recommended course for future HIV prevention interventions is to examine the role religiosity and spirituality can have in augmenting or mitigating risky behavior among Black MSM.

Limitations

Limitations existed in the recruitment of participants in that a majority of respondents were associated with agencies or individuals associated with HIV-specific community-based organizations and so may have different or even less biases than Black MSM overall. The use of the 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. The survey relied on the self-report of risk behaviors, which may not accurately reflect the true risk behaviors, although collected by confidential computer-assisted methods. The relationship between the constructs analyzed is multifaceted and interrelated, so conclusions from this paper are exploratory and may only be cursory, but important nonetheless.

Additional limitations in using an existing data set included that the ByH data set includes seven specific religiosity/spirituality variables (i.e., 4 religiosity and 3 spirituality). This limits, to some extent, the depth with which these domains can be examined. However, at this time, there are few studies of religiosity/spirituality in relation to HIV risk in Black MSM in the literature. An additional limitation is that the religiosity/spirituality items available in the ByH data set are not part of standardized scales. This limits comparisons of findings from this study to other studies that have relied on standardized measures. However, past research has not found clear-cut, gold standard religiosity/spirituality scales for use among risk behavior research, and none have been used with the Black MSM population making these data a valid resource with which to approach this study's questions.

Summary

Those individuals who had higher spirituality scores reported fewer instances of polysubstance abuse and depression, while those with higher religiosity scores reported more instance of polysubstance abuse and depression, and so overall among Black MSM, religiosity seemed to be a risk factor and spirituality seemed to be a protective factor as correlations of risky behavior, particularly polysubstance use.

Given that both religiosity and spirituality were correlated with substance use and depression among Black MSM, specifically higher levels of religiosity were associated with polysubstance abuse, and depression and higher levels of spirituality were associated with lower reports of depression and substance use, future studies should consider incorporation of both religion and spirituality as constructs in an effort to better understand the relationships between cognition (dissonance and consonance) and risk behavior among Black MSM. With the new knowledge obtained by this study, culturally specific and appropriate prevention interventions that incorporate a religious and/or spirituality component can better inform existing prevention programs or serve as standalone models to decrease HIV infection among Black MSM.

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