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Religious coping and hospital admissions among adults with sickle cell disease

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Abstract

Although a well-established literature implicates religiosity as a central element of the African American experience, little is known about how individuals from this group utilize religion to cope with specific *health-related* stressors. The present study examined the relation between religious coping and hospital admissions among a cohort of 95 adults with sickle cell disease—a genetic blood disorder that, in the United States, primarily affects people of African ancestry. Multiple regression analyses indicated that positive religious coping uniquely accounted for variance in hospital admissions after adjusting for other demographic and diagnostic variables. Specifically, greater endorsement of positive religious coping was associated with significantly fewer hospital admissions ($\beta = -.29$, $P<.05$). These results indicate a need for further investigation of the roles that religion and spirituality play in adjustment to sickle cell disease and their influence on health care utilization patterns and health outcomes.

Keywords

Religious coping; Hospital admissions; Sickle cell disease

When physical health status is challenged or threatened, many individuals cope by employing cognitive and behavioral strategies that are grounded in religious belief (Cigrang

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et al. 2003; Dunn and Horgas 2004; Pargament and Raiya 2007). Over the past decade, an emerging literature has specifically examined the ways in which individuals use religion to cope with chronic pain (Rippentrop 2005; Wachholtz and Pearce 2009; Wachholtz et al. 2007), often focusing on the extent to which individuals endorse religious values or participate in religious activities. The general consensus among these studies appears to be that religion confers both psychological and physical benefits. For example, in one large-scale epidemiologic survey of nearly 37,000 Canadians, researchers found that individuals who suffered from chronic pain and fatigue were better adjusted psychologically if they were also religious (Baetz and Bowen 2008). In addition, results from a study conducted with a cohort of 122 chronic pain patients found a significant association between religion and health outcomes, such that specific religious practices such as prayer, meditation, and consumption of religious media were inversely related to physical health outcomes (Rippentrop et al. 2005). These findings suggest that not only does religion appear to facilitate adjustment to chronic conditions, but also that individuals in poorer health are more likely to use or rely upon religion as a resource to cope with their illness.

Despite growing interest in the relation between religion and coping with chronic pain, relatively little has been written about its *social and cultural* dimensions. A rather well established literature purports the centrality of religion among American ethnic minority groups (Bazargan et al. 2004; Lee and Sharpe 2007) and several studies contend that members of these groups report higher levels of religious coping (Abraido-Lanza et al. 2004; Chatters et al. 2008)—especially when compared to their White counterparts (Lee and Sharpe 2007; Mattis and Jagers 2001; Taylor et al. 2007). It is surprising, then, given the disproportionate burden of chronic pain experienced by ethnically and culturally diverse populations (Green et al. 2003), that the literature focusing on religious coping and chronic illness outcomes among these groups is not more robust. Instead, the few studies that explicitly examine the association between religion and pain have relied almost exclusively upon monocultural, mostly White samples. Whether individuals from other racial or cultural groups utilize religion in ways comparable to this group is unknown. In the present study, we address this gap in the literature by focusing on religious coping among patients with sickle cell disease, a genetic blood disorder that, in the United States, primarily affects people of African descent.

Religion and spirituality in sickle cell disease

Sickle cell disease is a group of inherited blood disorders characterized by the presence of atypical red blood cells that block small blood vessels and inhibit the flow of oxygen and essential nutrients to various parts of the body (Dix 2001; Midence and Elander 1994; Serjeant and Serjeant 2001). Although sickle cell disease results in both acute and chronic health problems, the most commonly reported complication is unpredictable and severe pain (Ballas 1999; Carroll 1996; Grant et al. 2000).

To date, we have identified three published studies that explicitly examine religion-oriented variables in the context of sickle cell disease. Cooper-Effa and colleagues (2001) surveyed 71 adults with sickle cell disease in Georgia and found that the influence of religion on coping with pain was variable: scores on the Spiritual Well Being Scale were positively related to coping with the psychological complications of sickle cell disease, but were unrelated to perceived severity of sickle cell pain. Harrison and colleagues (2005) studied 50 adults with sickle cell in North Carolina and found that prayer, bible study, and intrinsic religiosity were unrelated to self-reports of pain, but church attendance was negatively associated. In a more recent report of 67 adults with sickle cell recruited from the same medical center, researchers found that religious coping (measured by the frequency of church attendance and prayer) had a more complex association with pain, psychopathology,

and healthcare utilization (O'Connell-Edwards et al. 2009). Specifically, participants who reported moderate prayer frequency had lower levels of anxiety and hostility—and also had significantly more emergency department visits. In contrast, church attendance evinced a more linear relational pattern with the outcome variables—although none of these associations were statistically significant (O'Connell-Edwards et al. 2009). Together, these studies demonstrate at least two challenges in conducting research on religion and health outcomes in sickle cell disease. First, there is considerable variability in terminology and operational definitions. Studies that purport to examine "religion" or "religiosity" often use very different methods for assessment, ranging from participant self-report of specific behaviors (e.g., prayer, meditation, church attendance) to endorsement of religious philosophy or worldviews. Second, the more recent findings imply that although religion (regardless of how it is defined) appears to be a poor predictor of sickle cell pain severity, it may be significantly related to other aspects of the condition that mediate adjustment outcomes. Very little research has been carried out to extend findings in either of these domains.

The current study extended previous research in three ways. First, we focused on an *objective* variable—hospital admissions—instead of *subjective* self-reports of pain or emergency department visits. Hospital admissions are comparatively less ambiguous in signifying pain severity and are less affected by recall error, response bias, and contextual influences (Jamison and Brown 1991; Levine and De Simone 1991). Second, we examined *religious coping* from a psychological perspective rather than from behavioral or philosophical perspectives because we thought that the former approach would yield more relevant information that would permit a clearer inference about its role in sickle cell-related outcomes. For example, certain religious behaviors (e.g., church attendance and prayer frequency) are often confounded with disease severity in that individuals who have less severe disease are likely to attend church services more often than those whose disease experiences are severe. Concomitantly, it is difficult to determine the precise mechanisms through which endorsement of a particular religious philosophy or worldview affects health-related outcomes, as there are several potential pathways that may not be amenable to positivist research. In the present study, we conceptualized religious coping as a psychological variable that provides insight into the *global patterns* that individuals might use when coping with stress in general. Finally, we also examined both positive and negative aspects of religious coping, which to our knowledge, have not been looked at together in sickle cell disease research.

Recent studies report that the use of religion to cope with health-related stressors is multidimensional and includes both positive and negative strategies (Bush et al. 1999; Greenway et al. 2007; Pargament et al. 1998; Zwingmann et al. 2006). Although findings suggest that positive religious coping strategies may be used more often among individuals with chronic pain (Keefe et al. 2001), negative strategies—often referred to as "religious struggle" have also been found to be significantly associated with depressive symptoms and emotional distress in other chronically ill samples (Fitchett et al. 2004). By approaching the research in this manner, we hoped to evaluate the influence of multidimensional aspects of religious coping on an index of pain severity (hospital admissions) that was uncontaminated by recall errors or situational cues.

Consistent with past research demonstrating significant associations between religious coping and chronic pain, we hypothesized that after adjusting for demographic and disease diagnostic variables, religious coping would significantly predict hospital admissions. Specifically, we expected that *positive religious coping* would be associated with fewer hospitalizations and that *religious struggle* would be associated with increased hospitalizations.

Method

Study design and procedures

Data for these analyses were extracted from a larger prospective study of the experience of respect and trust among 95 adult patients with sickle cell disease. All participants were seen at an urban academic medical center in the Mid-Atlantic region of the United States in 2006 and 2007. Eligible patients included adults over age 18 who were diagnosed with a sickle cell hemoglobinopathy (hemoglobin SS, hemoglobin SC, alpha thalassemia, or beta thalassemia). Informed consent was obtained according to procedures approved by the medical center's institutional review board, and included consent to review participants' medical records. Patients meeting eligibility criteria were recruited from several sites within the medical center, including the adult sickle cell and hematology outpatient clinics, the Emergency Department, the inpatient units, or within 5 days after discharge from the hospital. Patients who enrolled in the study completed a baseline interview that assessed demographic characteristics (e.g., age, sex, and educational attainment) and religious coping. The research team created abstraction forms and one investigator with a medical background who was working full-time for the project (LL) reviewed and abstracted records. Medical records were abstracted for 100% of participants and yielded data on clinical characteristics (e.g., hemoglobinopathy diagnosis) and hospital utilization (e.g. frequency of yearly inpatient admissions for acute pain episodes). Baseline interviews (also conducted by LL) took approximately 15 min to administer. Patients were paid $10 upon completion of the interview.

Measures

Hospital admissions—Hospitalizations were assessed using medical record abstraction to record the number of hospitalizations that participants had for acute, sickle cell-related pain episodes over the past year.

Clinical diagnosis—Information concerning the participant's hemoglobinopathy diagnosis was also obtained from the medical record. This variable was dichotomized to distinguish participants who were diagnosed with the most severe form of sickle cell disease —sickle cell anemia (hemoglobin SS)—from those who had other forms of the disease.

Demographic variables—Demographic variables were dichotomized by age (over or under 30 years old; coded as 0 and 1, respectively), sex (men or women; coded as 0 or 1, respectively); and college graduates or not (coded 1 and 0, respectively). These demographic variables were chosen because they have been found to be clinically meaningful to adult sickle cell and chronic pain populations (Abrams et al. 1994; Hannan et al. 1992; McClish et al. 2006).

Religious coping—The Brief RCOPE (Pargament et al. 1998) was used to evaluate positive (e.g., “I looked for a stronger connection with God”) and negative (e.g., “I wondered whether God had abandoned me”) aspects of religious coping. Participants indicated on a scale ranging from 1 (“not at all”) to 4 (“a great deal”) the extent to which they agreed with six items (three assessing each domain). Although evidence supporting the internal consistency, factor structure, and concurrent validity of these scales has been noted elsewhere (Pargament et al. 2000), we are not aware of previous studies that have used this scale among adults with sickle cell disease. Therefore, as a preliminary step, we evaluated the latent factor structure of the Brief RCOPE.

A principal component analysis with orthogonal varimax rotation was conducted on the 6 religious coping items. The sample was determined to be adequate for conducting this

analysis, given that the Kaiser–Meyer–Olkin index was .68, which is acceptable by conventional standards (Field 2009; Kaiser 1974). Bartlett's test of sphericity also indicated that correlations among the religious coping items were sufficient to conduct the principal component analysis, χ^2 (15) = 138.94, $P < .001$. Two factors emerged from this analysis with eigenvalues greater than 1. Together, these components explained 65.3% of the variance in religious coping scores. Factor loadings were apparent on five of the six religious coping items, with three items clearly loading onto a factor that appeared to measure *Positive Religious Coping* and two items clearly loading onto a factor that appeared to measure *Religious Struggle*. The sixth item ("I try to make sense of the situation and decide what to do without relying on God") had rotated factor loadings of −.31 and .54 on the *Positive Religious Coping* and *Religious Struggle* factors, respectively. Because of the difficulty in interpreting this item, it was dropped from subsequent analyses. Thus, total scores on the *positive religious coping* subscale ranged from 3 to 12, with higher scores indicating more positive endorsement of religious coping items. In contrast, total scores on the *religious struggle* subscale ranged from 2 to 8. These items were reverse-scored, such that higher scores indicated greater levels of religious struggle. Coefficient alpha was .72 for the three-item *positive religious coping* subscale and .79 for the two-item *religious struggle* subscale. The correlation between the two religious coping indices was significant but weak, $r = -.18$, $P < .05$, suggesting that they are conceptually related, but not identical constructs.

Data analysis

Complete data were obtained for 93 of the 95 participants. Overall, the entire sample reported an average of 3.02 hospital admissions over the past year, with scores ranging from 0 to 19 and a standard deviation of 4.26. Mean scores on the *positive religious coping* subscale were 9.82, SD = 2.16, while mean scores on the *religious struggle* subscale were 2.77, SD = 1.44. We noted upon further observation of the religious coping items that participants reported much higher endorsement of *positive religious coping* items and very little positive endorsement of items measuring *religious struggle*. As shown in Table 1, nearly 75% of participants responded "Quite a bit" or "A great deal" to the *positive religious coping* items, whereas approximately 90% of participants responded "Not at all" or "Somewhat" to the *religious struggle* items. Thus, for analytic purposes, we categorized the religious coping subscales into "High" and "Low" groups using the respective response indices as cut-offs.

With regard to demographic characteristics, the sample was equally split with regard to age (half were 30 and under). In addition, 59% (n = 55) of participants were female and 63% (n = 59) were diagnosed with homozygous sickle cell anemia. Slightly less than one quarter of participants had earned a college degree. Table 2 shows bivariate correlations among the major study variables (and descriptive statistics for continuously measured variables). Hospital admissions were significantly related to education and religious coping; individuals without a college degree tended to report more hospitalizations than those with a degree, and high positive religious coping was associated with fewer hospitalizations as well. In addition, men tended to agree more positively with the religious struggle items compared to women. No other bivariate correlations were statistically significant.

Hospital admissions

We assessed predictors of hospitalizations for acute pain episodes by conducting a hierarchical regression analysis in which the number of hospital admissions recorded in the medical chart over the past year was used as the dependent variable. In order to evaluate the unique contribution of religious coping to variance in hospital admissions for acute SCD pain, we entered hemoglobinopathy diagnosis in the first step of the equation and age, sex,

and education in the second step. Both indices of religious coping (e.g., *positive religious coping* and *religious struggle*) were entered in the third step. Results of this analysis are shown in Table 3. Hemoglobinopathy diagnosis entered in step 1 of the analysis accounted for a negligible proportion (.1%) of the variance in hospital admissions. However, as a group, the demographic variables entered in step 2 accounted for 6.7% of the variance in hospital admissions. When *positive religious coping* and *religious struggle* were added in the third step, the total variance accounted for increased to 14.8%. The additional 8.1% of variance contributed by these variables was statistically significant, $\Delta F (2, 86) = 4.12$, $P = .02$. Inspection of the full regression model indicated that *positive religious coping* ($\beta = -.29$) was the only unique predictor of hospital admissions. After adjusting for diagnostic and demographic variables, participants who reported greater endorsement of positive religious coping items had significantly fewer hospital admissions in the past year compared to those who had lower endorsement. *Religious struggle* was unrelated to any of the demographic or diagnostic variables (with the exception of sex) and was not associated with hospital admissions.

Discussion

Several studies suggest a positive relation between religion and coping with health-related stressors, and recent investigations have also distinguished between positive and negative aspects of religious coping. Yet, there is a dearth of literature examining health-related religious coping among members of diverse cultural groups. The purpose of this study was to explore the relation between religious coping and hospital admissions in a sample of African American adults coping with sickle cell disease. Given the centrality of religion to the African American experience, we hypothesized that greater endorsement of *positive religious coping* would be associated with fewer hospital admissions. Conversely, we expected greater endorsement of negative religious coping (or, *religious struggle*) to be significantly related to increased hospital admissions.

Our findings partially confirmed this hypothesis. Religious coping contributed additional variance in hospital admissions over and above that contributed by demographic and diagnostic variables, but only positive religious coping emerged as a significant predictor. Specifically, participants who reported greater positive religious coping had fewer hospital admissions over the past 12 months (M = 1.29) compared to those who endorsed lower levels (M = 4.23). *Religious struggle* was not associated with hospital admissions.

Overall, these findings are consistent with the broader literature that conceptualizes *positive religious coping* as a salutogenic (i.e., health-supporting) component of adjustment, especially with regard to health-related stressors (Ano and Vasconcelles 2005; Bush et al. 1999; Bussing et al. 2009; Levin 1996; Tarakeshwar et al. 2006). Although more research is needed, it is interesting to speculate on possible reasons why positive religious coping was uniquely associated with hospital admissions among participants in this study. One possibility is that individuals who utilize religion to cope with sickle cell pain may also have a worldview orientation that leads to either: (a) positive reappraisal of the stress involved in coping with sickle cell disease; or (b) engagement with more effective self-care and pain management behaviors that—collectively or in isolation—make hospitalization less likely when pain episodes occur. This speculation is based on findings that religion and spirituality are often related to optimism (Cotton et al. 2006; Salsman et al. 2005), well-being (Astrow et al. 2001), and other subjective positive psychological indicators that could be conceptualized as potential mechanisms through which religious coping operates to impact sickle cell-related hospital admissions and health outcomes. Bediako and Neblett (2010) discuss this possibility in their investigation of perceived stress among adults coping with sickle cell disease and their findings may also extend to health care utilization contexts.

Overall, this study provides general support for the idea that religious coping may be an important variable to consider when examining health care utilization patterns among adults coping with SCD.

Religious struggle was not associated with hospital admissions; this finding is consistent with at least one other study that also reported no significant association between negative religious coping and health outcomes in a sample of Midwestern patients with chronic pain (Bush et al. 1999). In addition, the relatively low level of endorsement of *religious struggle* is consistent with prior research (Pargament et al. 1998), but its interpretation in this sample is not clearly apparent. In subsequent analyses (not reported here), we included the religious coping item that was dropped because it loaded on both positive and negative factors. Including this item did not modify the outcome of the regression analysis, regardless of whether it was included as part of the *positive religious coping* or *religious struggle* factor. However, given that a very small percentage of participants in our sample endorsed *religious struggle* items, further study using both quantitative and qualitative methods would be helpful in facilitating our broader understanding of the impact of religious struggle in this population.

The current study has several strengths. First, we collected objective data from medical charts, which provided a more accurate record of hospital admissions compared to patient self-reports that might be subject to error and recall bias. Second, we conducted a thorough assessment of the psychometric properties of the Brief RCOPE instrument, given its limited use with this particular patient population. Doing so permitted us to have increased confidence in the reliability of the *religious coping* items and in the validity of our results. Third, we controlled for important demographic and diagnostic variables that are often associated with increased hospital admissions, further diminishing the likelihood that the observed relations among age and hospitalizations are spurious.

Given the exploratory nature of this study, a few notable limitations are the small sample size and the use of participants from a single medical center. The cross-sectional nature of the study warrants additional concern in how our findings are interpreted—namely, the fact that hospital admissions were assessed retrospectively and would not have captured those that occurred outside of our hospital system. Although we have discussed the use of data abstracted from the medical chart as a strength of the study, our results would be significantly enhanced with a prospective analysis of hospital admissions that *follows* baseline assessment of religious coping. Also, it would have been useful to assess pain severity and/or pain tolerance directly, as these variables are related to health care-seeking behaviors and might influence hospital admissions. In addition, the results of our study do not inform us about the extent to which religious coping differs from religious behaviors such as church attendance. Finally, we dichotomized several demographic and predictor variables because participant responses did not utilize the full range of options on some items. While dichotomization is appropriate for regression analysis, doing so might have adversely affected our ability to detect effects. Future research with larger samples would be more conducive for using continuous variables that will result in analyses with increased power.

Despite these limitations, the current study has provided data suggesting that evaluation of a patient's use of religion as a coping resource might constitute important considerations in comprehensive clinical assessments of sickle cell disease. This study is meaningful because it examined religious coping in a patient population that has typically been overlooked—adults with sickle cell disease. Further, given that this condition affects a considerable proportion of African Americans, our attention to the sociocultural context of religious coping is significant. The primary findings—that positive religious coping is a significant

predictor of hospital admissions and that religious struggle appears to be much less influential—are important for the development of several lines of inquiry. Future research on religious coping with this patient population might include further emphasis on positive religious coping or deeper investigations into the measurement of religious struggle. Other interesting avenues for future research are to explore whether positive religious copers have better overall health outcomes or whether systems of comprehensive care—enhanced with pastoral counseling or spiritual support—can improve religious coping, overall well-being and other health outcomes among adults with sickle cell disease.

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Table 1

Participant endorsements of brief RCOPE items (% agreement), N = 93

	Not at all	Somewhat	Quite a bit	A great deal
I think about how my life is part of a greater spiritual force[a]	7.4	29.5	14.7	48.4
I work together with God as partners[a]	3.1	22.1	23.2	51.6
I look to God for strength, support, and guidance[a]	0	11.5	21.1	67.4
I feel God is punishing me for my lack of spirituality[b]	71.6	18.9	6.3	3.2
I wonder whether God has abandoned me[b]	77.9	13.7	2.1	6.3
I try to make sense of the situation and decide what to do without relying on God	59.6	30.9	6.4	3.1

[a] Positive religious coping

[b] Religious struggle

Table 2

Bivariate correlations of the major study variables (N = 93)

Variable	1	2	3	4	5	6	7
1. Hospital admissions	-						
2. Sickle cell diagnosis	−.02	-					
3. Age	−.15	−.03	-				
4. Sex	−.04	.13	.03	-			
5. Education	− **.22**	.09	.07	.13	-		
6. Religious coping	− **.32**	−.09	.10	−.03	.14	-	
7. Religious struggle	.05	.11	−.01	**.23**	.02	− **.18**	-

Coefficients in bold underline are significant at $P < .05$

Table 3

Standardized coefficients for the regression analysis predicting hospital admissions in past year, N = 93

	Step 1	Step 2	Step 3
Diagnosis	.922	−.007	−.036
Age		−.132	−.107
Sex		−.008	−.024
Education		−.210*	−.167
Positive religious coping			−.289*
Religious struggle			.014
R^2 (*P* value)	.001 (.83)	.067 (.10)	.148 (.02)

*$P < .05$