

ORIGINAL ARTICLES

Spirituality and Religion in Patients with HIV/AIDS

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BACKGROUND: Spirituality and religion are often central issues for patients dealing with chronic illness. The purpose of this study is to characterize spirituality/religion in a large and diverse sample of patients with HIV/AIDS by using several measures of spirituality/religion, to examine associations between spirituality/religion and a number of demographic, clinical, and psychosocial variables, and to assess changes in levels of spirituality over 12 to 18 months.

METHODS: We interviewed 450 patients from 4 clinical sites. Spirituality/religion was assessed by using 8 measures: the Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded scale (meaning/peace, faith, and overall spirituality); the Duke Religion Index (organized and nonorganized religious activities, and intrinsic religiosity); and the Brief RCOPE scale (positive and negative religious coping). Covariates included demographics and clinical characteristics, HIV symptoms, health status, social support, self-esteem, optimism, and depressive symptoms.

RESULTS: The patients' mean (SD) age was 43.3 (8.4) years; 387 (86%) were male; 246 (55%) were minorities; and 358 (80%) indicated a specific religious preference. Ninety-five (23%) participants attended religious services weekly, and 143 (32%) engaged in prayer or meditation at least daily. Three hundred thirty-nine (75%) patients said that their illness had strengthened their faith at least a little, and patients used positive religious coping strategies (e.g., sought God's love and care) more often than negative ones (e.g., wondered whether God has abandoned me; $P < .0001$). In 8 multivariable models, factors associated with most facets of spirituality/

religion included ethnic and racial minority status, greater optimism, less alcohol use, having a religion, greater self-esteem, greater life satisfaction, and lower overall functioning ($R^2 = .16$ to $.74$). Mean levels of spirituality did not change significantly over 12 to 18 months.

CONCLUSIONS: Most patients with HIV/AIDS belonged to an organized religion and use their religion to cope with their illness. Patients with greater optimism, greater self-esteem, greater life satisfaction, minorities, and patients who drink less alcohol tend to be both more spiritual and religious. Spirituality levels remain stable over 12 to 18 months.

KEY WORDS: religion; spirituality; HIV; AIDS.

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Affecting over 1 million Americans,¹ HIV/AIDS presents a unique set of existential challenges to patients as they confront issues of hope, death, grief, meaning/purpose, and loss.^{2–4} Spirituality, broadly defined as that which gives meaning and purpose to life, is often a central issue for patients at the end of life or those dealing with a chronic illness such as HIV/AIDS.^{5–8} Spirituality/religion is a complex construct that can incorporate both the internal, personal, and emotional expression of the sacred (assessed by spiritual well-being, peace and comfort derived from faith, or spiritual coping) and the formal, institutional, and outward expression of the sacred (assessed by the importance of religion, belief in God, and frequency of attendance at religious services or prayer).^{9,10}

People with HIV/AIDS incorporate spirituality as a way to cope, to help reframe their lives, and to bring a sense of meaning and purpose to their lives in the face of an often devastating situation.^{7,11} In people with HIV/AIDS, higher levels of spirituality have been associated with improvements in life satisfaction, functional health status, health-related quality of life (HRQoL), and overall well-being, even when controlling for other salient factors (e.g., age, HIV symptoms).^{12–15} A smaller

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body of evidence points to the potentially harmful effects of spirituality/religion for persons with HIV/AIDS who may have been ostracized from their religious institutions or their own communities of faith due to lifestyle issues or the stigma/prejudice associated with being HIV-positive.^{16,17}

In general, despite the body of empirical evidence supporting a mostly salutary effect of various aspects of spirituality/religion on mental and physical health outcomes in people with chronic health conditions,^{9,18} relatively little attention has been paid to the role of spirituality/religion in the lives of people living with HIV/AIDS.^{13,19,20} Furthermore, previous studies have been limited by small sample sizes, cross-sectional design, single site recruitment, and a single-item or single-measure for religion/spirituality.^{4,8,21} For example, a study by Coleman and Holzemer of 177 African American men and women with HIV assessed spiritual well-being,²² but did not examine other important spiritual/religious indicators such as the use of religious coping or the level of intrinsic religiosity. Other studies have utilized relatively smaller, non-geographically diverse samples with sample sizes ranging from 10 to 275,^{2,7,15} limiting the generalizability of findings to samples outside those specific geographic regions or demographic make-ups. A more in-depth assessment of religious/spiritual factors in the lives of people with HIV/AIDS is critical to provide more targeted information to be used in interventions and clinical interactions aimed at promoting health and improving HRQoL for people with HIV/AIDS.

Therefore, the goals of this study were: (1) to characterize various facets of spirituality/religion in a large, representative sample of patients with HIV/AIDS by using several measures of spirituality/religion; (2) to examine associations between spirituality/religion, demographics, clinical characteristics, health status, and a number of psychosocial variables including social support, self-esteem, optimism, and depressive symptoms; and (3) to assess changes in overall level of spirituality over a 12 to 18-month timeframe. Our conceptual model included a range of psychosocial, clinical, and demographic variables that have been posited to be related to spirituality/religion in patients with a chronic illness such as HIV/AIDS.^{23,24}

METHODS

Procedure

Between February 2002 and 2003, we recruited 450 outpatients with various stages of HIV/AIDS from 4 sites in 3 cities: the University of Cincinnati Medical Center and the Cincinnati Veterans Affairs (VA) Medical Center, Cincinnati, OH; George Washington University Medical Center, Washington, DC; and the VA Pittsburgh Healthcare System, Pittsburgh, PA. The institutional review boards from each participating site approved the study and all participants provided informed consent. A trained interviewer administered a battery of questionnaires to eligible subjects. To examine changes in spirituality/religion over time, patients were re-interviewed 12 to 18 months after their baseline assessment. Subjects received \$30 for each assessment for their time and effort.

Measures

Demographic and Clinical Variables. Demographic and clinical data were collected both from chart reviews and patient

interviews. Demographic data included age, sex, race/ethnicity, sexual orientation, marital status, presence of children, health insurance status, education level, employment status, and housing status. Clinical data included year diagnosed with HIV/AIDS; CD4 cell count; viral load; use of injection drugs and alcohol; receipt of highly active antiretroviral therapy (HAART); and type of treating hospital (VA vs non-VA). Information regarding current HAART use was obtained both by chart review and patient interview, with names and pictures of all approved antiretroviral medications presented to the patient for ease of identification. In addition, religious affiliation was assessed by asking, "What is your religious preference?" Participants were given one of 20 specific religions and denominations from which to choose, or could choose "none," "other specific," or "undesignated."

Outcome Variables. We assessed spirituality and religion by using 3 measures: the Duke Religion Index (DUREL)²⁵; the Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded (FACIT-SpEx) measure²⁶; and the Brief RCOPE.²⁷ The DUREL is a 5-item measure that assesses organized religious activity (frequency of attending religious services), nonorganized religious activity (frequency of praying, meditating, or studying religious text) and intrinsic religiosity (internalization of one's religious practices and beliefs).²⁵ Items are scored on a 5 to 6-point Likert scale, and responses are summed so that the total score ranges from a low of 5 to a high of 27. The Cronbach's α for the intrinsic religiosity subscale has been found to range from 0.75 to 0.88.²⁵

The FACIT-SpEx is a 23-item measure of spirituality with subscales for meaning and peace (sense of meaning/peace/purpose in life) and faith (comfort and strength in one's spiritual beliefs).²⁶ Responses are scored on a 5-point Likert scale (options include: "not at all," "a little bit," "somewhat," "quite a bit," and "very much"). The potential ranges are: 0 (low) to 92 (high) for the total score; 0 to 32 for the meaning/peace subscale; and 0 to 16 for the faith subscale. The measure has good internal reliability and convergent validity with other measures of religion and spirituality.²⁶

The Brief RCOPE is a 14-item measure adapted from the full RCOPE (a 17-factor validated measure assessing the full range of religious coping methods)²⁸ that addresses (1) positive religious coping strategies (religious forgiveness, seeking spiritual support, collaborative religious coping, spiritual connection, religious purification, and benevolent religious reappraisals) with ranges from 7 (low) to 28 (high), and (2) negative religious coping strategies (spiritual discontent, punishing God reappraisals, interpersonal religious discontent, demonic reappraisal, and reappraisals of God's powers), with scores also ranging from 7 to 28.²⁷ Each item is scored on a 4-point Likert scale with response options including "not at all," "somewhat," "quite a bit," and "a great deal." This brief scale has high internal consistency ($\alpha=0.81$ to 0.90) and good discriminant validity.²⁷

Independent Variables. Health status and health concerns were assessed by using the HIV/AIDS-targeted quality of life (HAT-QoL) measure, a 34-item scale addressing 9 domains: overall functioning; sexual dysfunction; disclosure worries; medication worries; health worries; financial worries; HIV mastery, or level of comfort with how the patient contracted HIV; life satisfaction; and provider trust.²⁹ Each subscale is

scored from 0 to 100. The instrument has good psychometric properties, including low ceiling/floor effects, good internal consistency, and construct validity.²⁹

Social support was measured by using the 12-item Brief Interpersonal Support Evaluation List, which assesses appraisal, belonging, and tangible support, with scores ranging from 12 to 48 (higher scores indicate greater social support).³⁰ Self-esteem was measured by using the 6-item Rosenberg Global Self-Esteem Measure, in which scores range from 6 to 24, with higher scores indicating greater self-esteem.³¹ We assessed optimism by using the 12-item Life Orientation Test (LOT).³² Scores on the LOT can range from 0 (low) to 32 (high). The LOT has been found to have a Cronbach's α of 0.76 and a test-retest reliability coefficient of 0.79.³²

To assess depressive symptoms, we administered the 10-item version of the Center for Epidemiological Studies—Depression (CESD-10) scale.^{33,34} Scores on the CESD-10 scale can range from 0 to 30, with scores > 10 indicative of significant depressive symptoms. The CESD-10 has been found to have a test-retest reliability coefficient of 0.71 and good discriminant and convergent validity.³³

Bothersome HIV symptoms were captured via the HIV Symptom Index (HSI), which assesses both the presence and degree of both of 20 symptoms, including fatigue, fever, pain or numbness, difficulty with memory, rash, headache, stomach pain or gas/bloating, changes in body appearance such as fat deposits, and changes in weight over the past 4 weeks.³⁵ For each symptom reported, the patients rated the degree of bother on a 4-point Likert scale: "it doesn't bother me" or "it bothers me a little" (dichotomized and scored as a 0), or "it bothers me" or "it bothers me a lot" (scored as a 1). Because 5 items from the original HSI appeared on face validity to be measuring a construct similar to that of the CESD-10, we excluded those 5 HSI items and used a 15-item "bothersome HIV symptom scale" in this analysis. The original HSI has construct validity and has been shown to be more sensitive and more reproducible than provider-reported HIV symptoms.^{36,37}

Statistical Analyses

Descriptive statistics including means, standard deviations, ranges, and medians for continuous data and frequencies for categorical data were calculated. Data were nearly complete for every interview—of 347 participants interviewed at Time 2, data were missing for no more than one participant for 46 of 52 variables. We dichotomized religious preference into having a religious affiliation/preference versus not and housing status into stable versus unstable (transient or homeless). We calculated Pearson r and nonparametric correlations to assess significant bivariate relationships between study variables. We constructed 8 separate multivariable linear regression models in order to determine factors associated with each spirituality/religion score (the 3 DUREL subscales, the overall FACIT-SpEx and the 2 FACIT-SpEx subscales, and the 2 Brief RCOPE subscales) at the baseline interview from a set of baseline demographic, clinical, and psychosocial variables. For each model, we used the following model-building process: first, we assessed bivariate associations between the dependent variable and each of approximately 20 potential covariates; covariates not significantly associated ($P > .10$) with the outcome were dropped from further consideration in modeling that outcome. The remaining candidate covariates were entered into a mul-

tiply regression model and subjected to backward selection until all remaining covariates had P values $< .05$, adjusted for the other remaining covariates. Because of the large number of candidate independent variables that were considered for inclusion into each model, and because many of those independent variables assessed patient well-being, we anticipated finding some collinearity among the independent variables. We addressed this possibility at the end of each backward selection process by re-inserting into the "final" equation (in which each independent variable had a $P < .05$) variables dropped earlier in the selection process that were significantly related at the bivariate level to variables in the "final" model. In none of our models did such a re-arrangement of possible independent variables result in a model with greater explanatory ability than did the model arrived at through simple backward selection.

We assessed change over time for each of the 8 spirituality/religion scores by using paired t tests. Given the variation in re-interview time at the follow-up visit (12 to 18 months), we also calculated bivariate correlations between a "time since initial interview" variable and other key variables (e.g., overall spirituality, optimism). Here, to limit the number of multivariable analyses, we constructed just one multiple regression model, with change in FACIT-SpEx scores over time as the dependent variable; the FACIT-SpEx was selected over the other 7 spirituality/religion scales or subscales because it is the most general measure among them. Covariates in this "change over time" model consisted both of measures from the initial interview (e.g., demographics such as sex) and changes in measures at the follow-up interview (e.g., CESD-10 change scores from Time 1 to Time 2). All analyses were performed by using SAS (version 8.02, SAS Institute, Cary, NC).

RESULTS

Demographic and Clinical Characteristics of Sample

The mean (SD) age of the 450 participants was 43.3 (8.4) years; 387 (86%) were male; 246 (55%) were minorities (50% African Americans); and 390 (87%) completed high school or attended some college (Table 1). Patients had been diagnosed with HIV for an average (SD) of 8.4 (5.3) years, 342 (76%) were taking HAART, and 232 (53%) had viral loads ≤ 400 copies/mL. Among the original 450 patients, 347 (77%) were available for follow-up. There were no significant differences between the patients interviewed twice and patients interviewed only once with respect to demographic, clinical, and psychosocial characteristics, except that those who had second interviews were more likely to have a viral load below the limit of detection (≤ 400 copies/mL), to be Caucasian, and to have more health disclosure worries than those who were only assessed at baseline. Of the 347 who completed a follow-up visit, the large majority of patients (90%) had the second interview within 12 to 15 months of the first. Correlations between time between interviews and other variables were not significant.

Religious and Spiritual Characteristics of Sample

A total of 358 (80%) patients indicated a specific religious preference, with participants most commonly describing their denominations as Roman Catholicism or Southern Baptist (Table 2). Most participants indicated that spirituality was an

Table 1. Demographic and Clinical Characteristics

Variables	
Mean (SD) age (y), N (%)	43.3 (8.4)
Sex	
Male, N (%)	387 (86.0)
Female, N (%)	63 (14.0)
Race/ethnicity	
Caucasian, N (%)	204 (45.3)
African American, N (%)	225 (50.0)
Hispanic, N (%)	10 (2.2)
Asian, N (%)	2 (0.4)
Other, N (%)	9 (2.0)
Sexual orientation	
Heterosexual, N (%)	148 (32.9)
Gay or lesbian, N (%)	227 (50.4)
Bisexual, N (%)	54 (12.0)
Asexual, N (%)	2 (0.4)
Refused to answer, N (%)	19 (4.2)
Marital status	
Single, N (%)	327 (72.8)
Married or living with significant other, N (%)	122 (27.2)
Children	
Has one or more children, N (%)	139 (30.9)
No children, N (%)	311 (69.1)
Health insurance	
No health insurance, N (%)	54 (12.0)
Has health insurance (includes VA), N (%)	396 (88.0)
Education	
Did not graduate from high school, N (%)	60 (13.3)
High school graduate or some college, N (%)	258 (57.3)
College graduate or professional education, N (%)	132 (29.3)
Employment status	
Working full time, N (%)	180 (40.0)
Working part-time, N (%)	51 (11.6)
Not working, N (%)	218 (48.4)
Housing	
Unstable,* N (%)	35 (7.8)
Stable, N (%)	415 (92.2)
Mean (SD) number of alcoholic drinks/mo	12.5 (30.2)
History of injection drug use	
Past history of use, N (%)	61 (14.1)
No history, N (%)	371 (85.9)
Mean (SD) duration since HIV diagnosis (y)	8.4 (5.3)
HAART status	
Currently on HAART, N (%)	342 (76.3)
Not on HAART, N (%)	106 (23.7)
Mean (SD) CD4 count (cells/ μ L)	420.5 (301.0)
Viral load level	
\leq 400 copies/mL, N (%)	232 (52.6)
$>$ 400 copies/mL, N (%)	209 (47.4)
Type of hospital	
VA hospital, N (%)	100 (22.2)
University hospital	350 (77.8)

*Unstable housing: transient or homeless.
HAART, highly active antiretroviral therapy; VA, Veterans Affairs.

important factor in their lives; for example, 95 patients (23%) attended religious services once a week or more often, 69 (15%) attended a few times a month, 147 (33%) attended once to a few times a year; and 129 (29%) patients never attended. Regarding nonorganized religious activities such as prayer, meditation, or religious text study, 143 (32%) engaged in nonorganized religious activity at least daily, 70 (16%) engaged in them one or more times a week, 50 (11%) engaged in them a few times a month, and 187 (42%) patients never engaged in those activities.

On the FACIT-SpEx meaning/peace subscale, 420 patients (94%) felt at least a little sense of purpose in their life,

Table 2. Religious and Spiritual Characteristics

Religious Preference	N	%
Roman Catholic	65	14.4
Southern Baptist	57	12.7
Other Baptist	51	11.3
Nondenominational Christian	40	8.9
Pentecostal: Assembly of God	23	5.1
Methodist	22	4.9
Church of Christ	14	3.1
Presbyterian	13	2.9
Other protestant	13	2.9
Episcopal	11	2.4
Lutheran	9	2.0
African American Episcopal	7	1.6
Jewish	7	1.6
Muslim	5	1.1
Evangelical	3	0.7
Orthodox Church	2	0.4
Mormon	2	0.4
Undesignated	41	9.1
Other specific	14	3.1
No religious preference	51	11.3

Measure	Mean	SD	Median	Range
Duke Religion Index				
Organized religious activity	3.0	1.7	3	1 to 6
Nonorganized religious activity	2.9	2.0	2	1 to 6
Intrinsic religiosity	11.2	3.6	12	3 to 15
FACIT-SpEx	63.5	13.2	66	1 to 92
Meaning/peace	21.3	7.5	22	0 to 32
Faith	10.0	5.0	11	0 to 16
RCOPE				
Positive religious coping	17.7	6.4	18	7 to 28
Negative religious coping	10.7	4.3	9	7 to 28

FACIT-SpEx, Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded.

and on the faith subscale, 396 patients (88%) found at least a little comfort in their faith or spiritual beliefs and 339 patients (75%) said that their illness had strengthened their faith or spiritual beliefs at least a little. Participants used positive religious coping strategies significantly more often than they used negative religious coping strategies ($P < .0001$). Specifically, the positive coping strategies most often endorsed with “used a great deal” included: “looked for a stronger connection with God” ($N=146$ [33%]), “sought God’s love and care” ($N=159$ [35%]), and “tried to see how God might be trying to strengthen me in this situation” ($N=123$ [27%]). The negative religious coping strategies most often used a great deal included: “disagreed with what the church wanted me to do or believe” ($N=60$ [13%]), “felt dissatisfaction with the clergy” ($N=47$ [11%]), “decided the Devil made this happen” ($N=38$ [8%]), and “wondered whether God had abandoned me” ($N=32$ [7%]).

Associations with Outcome Variables at Baseline

Bivariate Analyses

DUREL. In bivariate analyses, organized religious activity, nonorganized religious activity, and intrinsic religiosity were each associated at the $P < .05$ level with less alcohol use ($r = -.17$ to $-.22$), minority status (for example, mean organized religious activity score = 3.4 for minorities vs 2.5 for Caucasians), having a religious preference, and greater optimism (Table 3). Each of the DUREL subscales was also significantly

correlated with having children, female sex, and heterosexual orientation, but not with CD4 counts or viral loads.

FACIT-SpEx. Higher overall, meaning/peace, and faith scores were seen among patients of minority race/ethnicity (mean overall score=67.9 for minorities vs 58.3 for Caucasians; $P<.01$), and those who had greater levels of optimism, greater life satisfaction, greater self-esteem, and better social support. Patients with higher scores (overall, meaning/peace, and faith) also had lower rates of significant depressive symptoms, fewer bothersome HIV symptoms, and better overall functioning, but FACIT-SpEx scores had little to no correlation with CD4 count or viral load.

Brief RCOPE. In bivariate analyses, positive and negative religious coping were significantly although weakly associated with female sex (for example, the mean positive religious coping score was 21.1 for females vs 17.1 for males; $P<.01$), minority status, heterosexual orientation, and having children. In addition, negative religious coping (though not positive religious coping) was also associated with having more bothersome HIV symptoms, having more significant depressive symptoms, being less optimistic, and having a detectable viral load ($P<.05$ for all).

Multivariable Linear Regression Models. In 8 separate multivariable linear regression models of baseline data, a range of 16% to 74% of the variance in spirituality and religion was accounted for by a combination of various independent variables (Table 4). Higher spirituality/religion scores were significantly associated in at least 4 of the 8 final models with the following variables: minority race, less alcohol use, having a religion, greater optimism, greater self-esteem, greater life satisfaction, and worse overall functioning.

Baseline Data

DUREL. More frequent organized religious activity was associated with: minority status, less alcohol use, living with children, having a religion, and greater levels of optimism ($R^2=.30$). More frequent nonorganized religious activity was associated with: VA site (vs non-VA site), minority status, less alcohol use, financial support of dependents, having a religion, fewer disclosure worries, greater optimism, and a more recent HIV diagnosis ($R^2=.16$). Greater intrinsic religiosity was associated with: minority status, less alcohol use, having children,

having a religion, greater self-esteem, greater optimism, and a more recent HIV diagnosis ($R^2=.32$).

FACIT-SpEx. Higher overall FACIT-SpEx scores were associated with: minority status, less alcohol use, having stable housing, greater life satisfaction, less HIV mastery, fewer disclosure worries, greater social support, greater self-esteem, greater optimism, having a religion, and worse overall functioning ($R^2=.68$). Higher meaning/peace scores were associated with: minority status, having a religion, worse overall functioning, greater life satisfaction, fewer financial worries, fewer depressive symptoms, greater social support, greater self-esteem and greater optimism ($R^2=.74$). Higher faith scores were associated with: minority race, heterosexual orientation, less alcohol use, having a religion, lower overall functioning, greater life satisfaction, greater self-esteem, and greater optimism ($R^2=.45$).

Brief RCOPE. Positive religious coping was associated with: minority status, less alcohol use, geographic study site, female sex, having a religion, worse overall functioning, greater life satisfaction, less HIV mastery, and greater optimism ($R^2=.37$). Negative religious coping was associated with: minority status, younger age, having a religion, less HIV mastery, lower self-esteem, and less optimism ($R^2=.30$).

Change Over Time in DUREL, FACIT-SpEx, and Brief RCOPE Scores. Mean scores did not change significantly over 12 to 18 months for organized religious activity (DUREL-organized religious activity; mean [SD] change=−0.04 [1.11]; $P=NS$), and nonorganized religious activity (DUREL-nonorganized religious activity; mean [SD] change=−0.16 [1.54]; $P=NS$), overall spirituality (overall FACIT-SpEx; mean [SD] change=0.82 [13.14]; $P=NS$), faith (FACIT-SpEx faith; mean [SD] change=−0.06 [3.37]; $P=NS$), positive religious coping (Brief RCOPE Positive subscale; mean [SD] change=−0.07 [4.08]; $P=NS$), and negative religious coping (Brief RCOPE Negative subscale; mean [SD] change=−0.25 [3.58]; $P=NS$). Duke Religion Index Intrinsic Religiosity scores, however, decreased significantly over 12 to 18 months (mean [SD] change=−0.32 [2.48]; $P=.02$) and FACIT-SpEx meaning/peace scores increased significantly over time (mean [SD] change=0.61 [5.35]; $P=.03$).

Table 3. Correlations Between Continuous Independent and Outcome Variables at Baseline

	Age	Alcohol Use (Log)	Time Since Diagnosis	CD4 Count	Overall Functioning	Financial Worries	Disclosure Worries	HIV Mastery	Life Satisfaction	Depressive Symptoms	Self-Esteem	Social Support	Optimism
DUREL-ORA	0.06	−0.19	−0.07	0.07	0.06	0.07	−0.07	−0.05	0.18	−0.13	0.13	0.17	0.24
DUREL-NORA	0.08	−0.22	−0.08	0.07	−0.01	0.00	0.08	0.02	0.06	−0.06	0.19	0.16	0.21
DUREL-IR	0.07	−0.17	−0.16	0.07	0.03	0.06	0.01	−0.03	0.17	−0.05	0.23	0.18	0.29
FACIT-SpEX-O	0.16	0.09	−0.04	0.10	0.34	0.39	0.27	0.24	0.64	−0.50	0.64	0.54	0.67
FACIT-SpEX-M/P	0.17	−0.03	−0.04	0.12	0.46	0.52	0.28	0.36	0.72	−0.62	0.70	0.58	0.70
FACIT-SpEX-F	0.12	−0.20	−0.08	0.06	0.10	0.13	0.10	−0.02	0.38	−0.24	0.38	0.29	0.45
Brief RCOPE-Pos	−0.02	−0.25	−0.10	0.02	−0.09	−0.29	−0.05	−0.18	0.15	0.02	0.08	0.06	0.19
Brief RCOPE-Neg	−0.16	−0.04	0.02	−0.02	−0.26	−0.07	−0.28	−0.38	0.21	0.27	−0.43	−0.32	−0.36

DUREL-ORA, Duke Religion Index-Organized Religious Activity; DUREL-NORA, Duke Religion Index-Nonorganized Religious Activity; DUREL-IR, Duke Religion Index-Intrinsic Religiosity; FACIT-SpEX-O, Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded Overall; FACIT-SpEX, M/P, Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded Meaning/Peace; FACIT-SpEX-F, Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded Faith; Brief RCOPE-Pos, Brief RCOPE-Positive Religious Coping; Brief RCOPE-Neg, Brief RCOPE-Negative Religious Coping.

Table 4. Multivariable Linear Regression Models of Correlates of Religion/Spirituality at Baseline

	DUREL-ORA (β)	DUREL-NORA (β)	DUREL-IR (β)	FACIT-SpEx-O (β)	FACIT-SpEx-M/P (β)	FACIT-SpEx-F (β)	Brief RCOPE-Pos (β)	Brief RCOPE-Neg (β)
Independent variables								
Categorical								
Race—Caucasian (vs Minority)	−0.60	−0.36	−1.24	−4.38	−1.05	−2.22	−3.27	−1.54
Study site		0.48*					1.75†	
Housing—stable (vs unstable/transient)				4.84				
Living with children (vs not living with children)	0.61							
Having children (vs not having children)			0.78					
Having financial dependents (vs not having financial dependents)		0.43						
Heterosexual orientation (vs bisexual or homosexual)						0.94		
Having a religious preference (vs not having a religious preference)	1.54	0.72	3.02	6.79	1.01	3.01	4.06	1.21
Female gender (vs male)							1.56	
Depressive symptoms (Y/N)					−2.37			
Continuous								
Years since diagnosis		−0.03	−0.07					
Amount alcohol use (log)	−0.16	−0.24	−0.27	−0.78		−0.44	−0.82	
Age								−0.05
Overall functioning				−0.12	−0.04	−0.05	−0.06	
Financial worries					0.02			
Disclosure worries		0.01		0.08				
HIV mastery				−0.08			−0.03	−0.02
Life satisfaction				0.27	0.10	0.04	0.04	
Self-esteem			0.12	1.50	0.55	0.28		−0.32
Social support				0.34	0.09			
Optimism	0.05	0.05	0.09	0.86	0.26	0.19	0.20	−0.12
F	36.83‡	9.99‡	28.36‡	83.07‡	134.46‡	44.08‡	28.64‡	29.99‡
R ²	.30	.16	.32	.68	.74	.45	.37	.30

Italics indicate independent variables significant in 4 or more of the models.

*VA vs Non-VA.

†Site A vs other sites.

‡P < .0001; all reported parameter estimates are significant at the P < .05 level.

DUREL-ORA, Duke Religion Index-Organized Religious Activity; DUREL-NORA, Duke Religion Index-Non-Organized Religious Activity; DUREL-IR, Duke Religion Index-Intrinsic Religiosity; FACIT-SpEx-O, Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded Overall; FACIT-SpEx, M/P, Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded Meaning/Peace; FACIT-SpEx-F, Functional Assessment of Chronic Illness Therapy—Spirituality-Expanded Faith; Brief RCOPE-Pos, Brief RCOPE-Positive Religious Coping; Brief RCOPE-Neg, Brief RCOPE-Negative Religious Coping.

In the multivariable model with the change in overall FACIT-SpEx score as the dependent variable, increase in level of overall spirituality over time was associated with younger age; securing housing in the interim; increases in life satisfaction, social support, self-esteem, and optimism; a lower likelihood of having significant depressive symptoms; being on HAART at baseline; and time since diagnosis ($R^2 = .40$). The 2 correlates that remained significantly associated both at baseline and in change in levels of spirituality over time were life satisfaction and self-esteem, indicating a particularly strong link between spirituality and those factors.

DISCUSSION

The purpose of this study was to characterize spirituality and religion in a diverse sample of patients with HIV/AIDS and to examine the association of spirituality/religion with various demographic, clinical, and psychosocial correlates both at baseline and over time. Similar to a recent study by Lorenz et al.,²⁰ the overwhelming majority of participants reported that

spirituality is an important factor in their lives, as most indicated some sense of meaning/purpose in their lives and reported deriving comfort from their spiritual beliefs. The majority of our patients with HIV/AIDS belonged to an organized religion but participated more often in nonorganized religious activities (e.g., prayer, meditation). This finding may reflect the possibility that some religious organizations have generally not been supportive of people with HIV/AIDS and thus patients may have felt unwelcome or ostracized in their own communities of faith,^{16,17,38} or that private religious activities may be more accessible given that formal religious services are often offered only weekly.

Our findings echo those from earlier studies that showed that greater levels of spirituality were associated with health outcomes such as fewer mental health problems, fewer reported HIV-related symptoms, and better overall HRQoL in people with HIV/AIDS.^{13,14,21,22,39} Previous studies have found that people with HIV/AIDS often use religious coping (defined as how a person uses their spirituality/religion to manage a difficult situation) to find a sense of meaning/purpose in life, to

cope with issues of guilt and shame, and to deal with grief and bereavement associated with the disease.^{4,7,13,40,41} Positive religious coping strategies (e.g., seeking spiritual support) have been associated with better perceived outcomes, such as improvements in life satisfaction, self-rated health, and positive affect in patients with chronic illnesses, as opposed to negative religious coping (e.g., feeling that one's illness is a punishment from God).^{27,28,42,43} Our patients—in particular, African Americans—used religious coping strategies, using positive religious coping strategies such as “looking for a stronger connection with God” and “seeking God's love and care” significantly more often than negative religious coping strategies. Previous studies corroborate our finding that African Americans tend to be more religious/spiritual and utilize more religious coping (both positive and negative) than their Caucasian counterparts.^{9,26,44}

We also sought to determine demographic, clinical, and psychosocial correlates of spirituality/religion in patients with HIV/AIDS. In multivariable cross-sectional analyses, significant correlates of at least 4 of the 8 spirituality/religion measures included: minority status, greater optimism, less alcohol use, having a religious affiliation, greater self-esteem, greater life satisfaction, and lower overall functioning. Similar to findings by Lorenz et al.,²⁰ spirituality was not generally associated with clinical variables (CD4 count, viral load) in our sample.

Organized and nonorganized religious activity, intrinsic religiosity, overall spirituality, meaning/peace, faith, and positive religious coping were all also associated with greater levels of optimism. Conversely, the use of negative religious coping was associated with less optimism. While we cannot determine causality, it appears that more spiritual patients are also more optimistic, a quality that may help them cope with the unpredictability, grief, and anger that can be associated with having HIV/AIDS. Having an optimistic outlook on life and a “fighting spirit” against a terminal illness has been shown to improve patients' well-being, both physically and emotionally, in a variety of illnesses, including cancer and HIV/AIDS.^{45,46}

Six of the 8 spirituality/religion measures (all except for negative religious coping and meaning/peace) were associated with less alcohol use in multivariable analyses. This result corroborates previous studies that have shown consistent associations between higher levels of spirituality/religiosity and fewer health risk behaviors, including less alcohol use.⁹ One of the proposed mediators of the religion-health outcomes relationship has been health behaviors, though few studies have examined the potential mediating effect of health behaviors by using more advanced statistical techniques (e.g., structural equation modeling). The relationship seems plausible, however, because religious organizations often frown on alcohol use. It is also possible, though, that people who engage in less alcohol use feel a deeper sense of connection to their spiritual/religious selves or, conversely, that people who feel a deeper sense of connection to their spiritual/religious selves engage in less alcohol use.

This study was one of the first to examine changes in levels of spirituality in people with a chronic illness using a longitudinal design. Over 12 to 18 months, mean levels of spirituality, the use of religious coping strategies, and participation in both organized and nonorganized religious activities did not change significantly for the cohort, indicating that spirituality/religion was generally a relatively stable construct

in these patients' lives. On the other hand, increases in meaning/peace scores over 12 to 18 months were evident, as expected from aging and perhaps from reassessing life and its meaning in the face of a serious illness.^{2,47,48} The decreases in levels of intrinsic religiosity (i.e., internalization of one's religious practices and beliefs), however, were more surprising and may reflect the relatively lower rates of religious service attendance (and therefore of formal practices) in this population. Increases in levels of spirituality were associated, not surprisingly, with certain positive life changes: having secured housing; having more life satisfaction, social support, self-esteem, and optimism; having fewer depressive symptoms; and having had a longer time since diagnosis.

Our study has several limitations. First, we studied outpatients who had access to state-of-the-art treatments for HIV/AIDS: over 75% were receiving HAART and 53% had HIV viral loads below the detectable limit at baseline. Our findings, therefore, cannot be generalized to patients who do not have access to HAART. In addition, while the longitudinal findings lend support to a possible causal relationship between spirituality/religion and other variables, it is not possible to conclude that the relationships are causal. Nevertheless, this study is the first study of spirituality/religion to follow such a large cohort of patients with HIV/AIDS and to examine spirituality/religion using multiple measures at multiple sites.

Our results have a number of implications. Although Joint Commission on Accreditation of Healthcare Organizations standards require a spiritual assessment of all inpatients,⁴⁹ adherence to those standards is not routine. A potentially life-threatening diagnosis, such as HIV/AIDS, can trigger deep spiritual questions about the meaning of the illness, purpose in life, and relationship with God and others, which trained providers can elicit through inquiring about spiritual or religious issues during a clinical encounter. Our data show that spirituality/religion is important to patients with HIV, and that religious coping is rife. Because greater levels of spirituality (meaning/peace, positive religious coping, and intrinsic religiosity) are associated with various psychosocial characteristics and because patients want their providers to know about the spiritual/religious aspects of their lives,⁵⁰ assessing the patient's level of “spiritual well-being” may be helpful to taking a whole-person approach to patient-centered care. Few studies have assessed whether spiritually based interventions aimed at reducing religious struggle (often present in those who utilize negative religious coping strategies) or generating a sense of meaning and purpose in life could improve overall HRQoL or overall life satisfaction in people with a chronic illness such as HIV/AIDS.^{13,14,51,52} If such interventions are tested and found to be successful, conducting spiritual assessments would be even more valuable.

In conclusion, spiritual and religious beliefs and practices are common in a majority of patients with HIV/AIDS, are associated with a variety of clinical and psychosocial characteristics—especially African-American ethnicity, a religious affiliation, optimism, less alcohol use, self-esteem, life satisfaction, and overall functioning—and remain stable over 12 to 18 months. Future research should examine the feasibility of deriving a spiritual history, referring to clergy, or otherwise providing spiritual support and the relative impact such interventions may have on improving the lives of patients with HIV/AIDS.

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