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Spiritual Well-Being and Health-Related Quality of Life Among African–American Women with HIV/AIDS

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Abstract

Many HIV-positive women regard spirituality as an important part of their lives and spirituality may have positive impact on their health-related quality of life (HRQOL). Particularly among African American women with HIV, spirituality may serve as a cultural and psychological resource. This descriptive, crosssectional study examined associations between spiritual well-being (SWB) and its components, existential well-being (EWB) and religious well-being (RWB), and dimensions of HRQOL among a non-random sample of 118 African American HIV-positive women. A secondary analysis of data from two similar, NIH-funded studies: The Get Busy Living (GBL) Project and the KHARMA Project, was conducted. Baseline data on women from both studies were combined into one database and statistical analyses, including descriptive, correlation and hierarchical regression analyses, were conducted. Existential well-being was significantly positively ($\beta = .74$; $p = .014$) associated with the physical composite of HRQOL and accounted for a significant amount of unique variance (10.0%) beyond that explained by socio-demographic variables, religious well-being (RWB), HIV medication adherence, CD4 cell count and percentage, HIV viral load, and depressive symptoms. EWB was also significantly positively ($\beta = .57$; $p = .024$) associated with the mental health composite of HRQOL. Depressive symptomatology was also significantly inversely ($\beta = .40$; $p = .004$) associated with mental HRQOL. EWB accounted for a significant amount of additional variance (6.3%) beyond that explained by other variables. Spirituality is an important factor in the lives and quality of life of African American women and women living with HIV/AIDS. Further research is needed to examine relationships between spirituality and HRQOL among HIV-positive African American women.

Keywords

AIDS; HIV; African American; Women; Spirituality; Health; Quality of life

Introduction

Many people with HIV/AIDS identify spirituality as an important factor in health and well-being (Fryback and Reinert 1999; Lorenz et al. 2005) and for many years individuals have been using spirituality to cope with life's challenges. Spirituality includes feelings of connection to others and finding meaning in life (Barnum 1996; Freidmann et al. 2002; O'Brien 2003; Simoni et al. 2002) and spiritual well-being (SWB), specifically, is divided into two sub-components: *religious well-being* (RWB) which refers to a connection to God or a higher being and *existential well-being* (EWB) which refers to meaning and purpose in life (Ellison 1983). Spirituality has been associated with a variety of positive health outcomes for individuals (Hill and Pargament 2003; Miller and Thoresen 2003), HIV persons, in general (Ironson et al. 2002; Woods et al. 1999), and for HIV-positive women, including an improvement in quality of life (QOL; Grimsley 2006; Sowell et al. 2001) and longer HIV-related survival (Ironson et al. 2002; Ironson et al. 2006). However, findings regarding the relationship between spirituality and health outcomes have been mixed so additional research is needed.

Many (85%) patients in the United States (U.S.) who are infected with the human immunodeficiency virus (HIV) affirm the importance of spirituality in their lives, in dealing with family, work-related, or personal issues (Lorenz et al. 2005) and in enhancing their QOL (Grimsley 2006; Sowell et al. 2001). Since HIV is a chronic and life-threatening disease which requires life-long therapy and complex management it may often be difficult for individuals with HIV to make the lifestyle changes and commitments necessary to survive and maintain a good QOL. Spirituality may be an important resource that can be used to adjust to the demands of living with HIV in addition to the help received from mental health counseling, support groups, family and friends (Dalmida 2006). Therefore, as healthcare continues to focus on the client as a whole, it is imperative to consider clients' spirituality and spiritual well-being and the possible influence on health outcomes such as QOL (Como 2007; Dossey and Dossey 1998; King 2006), especially among the growing number of HIV-positive women.

Within the last decade, the rate of HIV incidence among women has significantly increased, especially among women in large inner cities (Center for Disease Control and Prevention 2005) and African American or Black women (Center for Disease Control and Prevention 2008) and by the end of 2005, an estimated 181,802 cumulative cases of Acquired Immunodeficiency Syndrome (AIDS) were reported among women in the United States (Center for Disease Control and Prevention 2008). In the U.S., HIV remains among the leading causes of death for women ages 25–44 years of age and is the leading cause of death for black women ages 25–34 years (Center for Disease Control and Prevention 2008). HIV disease impacts QOL at a time when many of those infected are in their most productive years (Guillory et al. 1997). For many HIV-positive women, spirituality continues to be an important resource used to cope with the stressors associated with HIV disease (Bosworth 2006; McCormick et al. 2001; Powell et al. 2003; Sowell et al. 2001) and maintain a good QOL (Grimsley 2006; Sowell et al. 2001). The present study examines the relationships between spiritual well-being and its subcomponents, EWB and RWB, and health-related quality of life (HRQOL) among a sample of African-American women living with HIV.

Background

Spirituality may serve as an individual resource for dealing with illness (Kelly 2004) and adjusting to uncertainties associated with chronic illness (Landis 1996), especially in instances when usual coping mechanisms are ineffective (Simoni et al. 2002), perhaps by facilitating more adaptive coping styles and positive emotions (Koenig and Cohen 2002). In

the lives of Blacks and African-Americans, spirituality and religion have historically served as important factors in coping, survival (Braxton et al. 2007; Giger et al. 2008; Polzer Casarez and Miles 2008), overall well-being, QOL (Powell et al. 2003), and in improving health outcomes (Chester et al. 2006; Figueroa et al. 2006). Particularly among African American women with HIV, spirituality serves as a cultural (Polzer Casarez and Miles 2008) and psychological resource (Braxton et al. 2007). Researchers have proposed that spirituality improves coping and an individual's response to stress (Koenig and Cohen 2002) by serving as a buffer between stress and immune function and improving a person's QOL (Rabin 1999). Spirituality has been associated with improved perception of health status, especially among women who are experiencing challenges to their health and well-being (Musgrave et al. 2002). Mueller and colleagues (2001), in a comprehensive review of the literature, found that most studies showed an association between spirituality and better health outcomes, including, less depression and greater coping skills and HRQOL.

Research has been done to examine the HRQOL of persons with HIV and other chronic illnesses as it relates to spiritual (Fryback and Reinert 1999; Grimsley 2006; Sowell et al. 2001; Tate and Forchheimer 2002; Tuck et al. 2000), psychological (Nannis et al. 1997; Sarna et al. 1999), or physiological health (Weinfurt et al. 2000). Research on the QOL of women living with HIV/AIDS remains limited, however. Very little research has also been done to examine the relationships between spirituality and HRQOL among HIV-positive women and even less among African-American HIV-positive women. Thus far, studies have shown that the EWB component of spirituality (Sowell et al. 2001; Brady et al. 1999) is positively related to the HRQOL of persons living with HIV (Sowell et al. 2001; Tuck et al. 2000). Spirituality provides practical, supportive resources that are able to promote QOL for women with HIV/AIDS (Sowell et al. 2001). Investigators have also highlighted the importance of considering psychological and physical or immunologic factors (Weinfurt et al. 2000) in relation to the HRQOL of HIV-positive women (Nannis et al. 1997; Sarna et al. 1999).

A need exists for more information about the role that spirituality plays in the stress-coping response and HRQOL. Many have reported that persons with HIV/AIDS may often use, embrace or identify with existential or non-religious aspects of spirituality more than religion (Woods et al. 1999; Koenig and Cohen 2002) and that existential or non-religious components of spirituality may often be associated with study variables, independent of or more than religious aspects (Coleman and Holzemer 1999; Tuck et al. 2000; Nelson et al. 2002). There was therefore particular interest in examining the components of SWB, particularly EWB, in relation to HRQOL. The purpose of this study was to examine interrelationships between spiritual well-being (SWB) and its components: EWB and RWB, and HRQOL mental and physical health composites. The two main study hypotheses proposed:

H1: EWB will be significantly associated with the physical health composite of HRQOL among a sample of HIV-positive African American women and will contribute additional unique variance in physical HRQOL beyond that explained by RWB, depressive symptoms, immune status, HIV medication adherence, and sociodemographic alone.

H2: EWB will be significantly associated with the mental health composite of HRQOL among a sample of HIV-positive African American women and will contribute additional unique variance in physical HRQOL than RWB, depressive symptoms and immune status measures alone, while controlling for sociodemographic variables and HIV medication adherence.

Results from the present study can be used to facilitate the assessment of the role of spiritual well-being and its components in health care and the development of interventions that incorporate spirituality to improve specific health and quality of life outcomes among African American women living with HIV/AIDS.

Methods

A descriptive cross-sectional, secondary data analysis of two similar, NIH-funded studies: The Get Busy Living (GBL) Project and the KHARMA Project, was conducted to examine the relationships between SWB components and HRQOL composites in women living with HIV. Baseline data on women from both studies were combined into one database and statistical analyses were conducted using SPSS 17.0 statistical software package. Combination of the databases maximized sample size and provided use of existing data to answer the research questions. Informed consent was obtained from all study participants.

The GBL HIV treatment adherence was designed to determine if a nurse counseling intervention based on motivational interviewing techniques enhanced adherence among a sample of 247 men and women with HIV who were taking antiretroviral medications (DiIorio et al. 2008). The KHARMA Project behavioral intervention trial was designed to test the effects of a group motivational intervention on adherence to antiretroviral medications and risk reduction behaviors among women with HIV (Holstad et al. 2006a). Participants were asked to complete a confidential baseline assessment and three follow-up assessments as part of the GBL Study and four follow-up assessments for the KHARMA Project. For both studies, eligibility was determined by study staff and criteria included: 1) being infected with HIV; 2) prescribed a new or different antiretroviral medication regimen or self-identification as non-adherent; 3) able to speak and understand English; 4) age 18 years or older; 5) mentally stable as determined by screening assessment and 6) willing to participate by completing computerized questionnaires and use Medication Event Monitoring System (MEMS®) caps data. The KHARMA Project also required women to be female by birth. Women were screened for both studies during a scheduled face-to-face interview using a screening form. A total of 249 women were screened for the KHARMA Project, and of those who were eligible 207 (83%) completed baseline interviews. Of the 282 men and women recruited for the GBL study, 272 (96.5%) were eligible and 247 (87.6%) participated in the study (DiIorio et al. 2008). Thirty-three percent ($n=79$) of the GBL study sample were women. Data collection was conducted between 2001 and 2005 for the GBL study and between 2005 and 2008 for the KHARMA Project. Data for both studies were collected via an Audio-Computer Assisted Self-Interview (ACASI) program. To be included in the current study, participants had to meet eligibility criteria of the original studies and be female by birth.

Setting

Both studies were conducted at the same clinical center for infectious diseases in metropolitan Atlanta. The KHARMA project also recruited HIV-positive women from four additional infectious disease (ID) clinics in the same city. One of the additional ID clinics is the largest non-profit, community-based AIDS service organization in the southeast. Eligibility for care at the ID clinic included having CD4 counts less than 200 cells/ μ l. In 2004, 77.5% of the 4767 active case managed clients were African-American and 33% were women.

Measures

Measures assessed included, basic demographics, SWB and its subscales, depressive symptoms, HRQOL, two adherence measures, and CD4 cell count. Unless otherwise

indicated, scale items were rated on a Likert-type format and individual items were summed to form a total score for each scale. Details regarding possible points for each scale are discussed below.

Spiritual well-being—Spiritual well-being was measured using the Spiritual Well-Being scale (Ellison 1983; Paloutzian and Ellison 1982), which has 20 items and is comprised of subscales that measure SWB in two dimensions: existential well-being (EWB) and religious well-being (RWB). The SWB scale asks individuals to rate their responses on a six-point Likert-type scale from (1) *strongly agree* to (6) *strongly disagree*. The ten odd-numbered items represent the RWB subscale and measure the degree to which a person perceives his or her SWB expressed in relation to God. The ten even-numbered items represent the EWB subscale and measure the degree to which a person is adjusted to self, community, surroundings, and life overall and can identify meaning and purpose in their life. Table 1 summarizes the SWB scale and subscale items. When compared to other spirituality scales used in a study of people living with HIV, the EWB subscale of SWB demonstrated the strongest correlations with other study variables (Tuck et al. 2000). The total SWB score ranges from 20 to 120, respectively representing lower and higher SWB. Scores on the EWB and RWB subscales range from 10 to 60 each, representing low to high EWB or RWB, respectively. Based on original testing, test-retest reliability of the SWB scale is greater than .85 (SWB=.93, RWB=.96, EWB=.86). The Cronbach's alphas ranged from .80 to .90 for this study.

Depressive symptoms—Depressive symptomatology was measured using the Center for Epidemiological Studies Depression scale (CES-D), which has 20 items and assesses symptoms of depression over the previous 7 days (Radloff and Locke 1986) using a four-point response scale from (0) “rarely” to (3) “most or all” of the time. The total score ranges from 0 to 60. A score of ≥ 16 on the CES-D indicates probable major depression (Radloff 1977). The Cronbach's alpha were .88 (GBL) and .89 (KHARMA) in this study.

Health-related quality of life—Health-related quality of life (HRQOL) was measured by the RAND-36-Item Health Survey 1, which measures HRQOL in eight dimensions, including physical functioning, role limitations due to physical health, role limitations due to emotional or personal problems, vitality (energy/fatigue), general health, emotional well-being, social functioning, and bodily pain (Hays et al. 1993). Subscale response sets vary between scales. For example, for the physical functioning scale, responses occur on a 3-point scale that include (1) “yes, limited a lot”, (2) “yes, limited a little”, or (3) “no, not limited at all” in response to a list of daily activities such as walking, bending, vacuuming, or engaging in sports. The emotional well-being scale requires responses on a 6-point scale that ranges from, (1) “all of the time” to (6) “none of the time” for questions about emotional well-being over the previous 4 weeks. Items are recoded per a scoring key provided by RAND researchers where a high score denotes a more favorable state of health with a range of 0–100 (from lowest to highest). The RAND-36 scale has no total score. Composite scores for mental and physical HRQOL were used. The Cronbach's alphas for subscales ranged from .70 to .93 (GBL) and from .65 to .94 (KHARMA). Cronbach's alphas for the Mental Health composite was .90 and the Physical Health composite was .95.

Immune Status—CD4 counts and percentages and HIV viral load levels were assessed from review of electronic charts. CD4 levels are reported as absolute number and percentage of CD4 T lymphocytes per cubic millimeter of peripheral blood. The health system's reference range is 468–1599 cells/ml for CD4 cell count and 31–57% for CD4 cell percentages. Viral load levels are reported as the number of viral copies per milliliter of

peripheral blood. CD4 and HIV viral load lab data was collected within 2 weeks of the baseline interview assessments.

Control Measures—Data on two self-report adherence tools, that each measure a different dimension or aspect of HIV medication adherence, were used to control for the potential confounding effect medication adherence has on immune status. The AIDS Clinical Trials Group (ACTG) Adherence Survey (Ickovics and Chesney 1997) and the Antiretroviral General Adherence Survey (AGAS; Holstad et al. 2006b) were used and assessed medication adherence within the previous month. Cronbach's alphas for this study were .95 (GBL) and .91 (KHARMA) for ACTG and .75 and .84, respectively for AGAS.

The ACTG adherence survey is a 14-item questionnaire that ascertains reasons for missed medications. The ACTG adherence survey responses are given on a four-point Likert scale that includes, (0) "never", (1) "rarely", (2) "sometimes", and (3) "often". Scores range from 0 to 42, with higher scores on this scale representing lower medication adherence.

The AGAS is comprised of 5 items that focus on the ease and ability of taking HIV medications as prescribed. Responses range from (1) "none of the time" to (6) "all of the time" on a Likert scale to questions such as, "I found it easy to take my H I V medications as the healthcare provider advised." AGAS scores range from 0 to 30 and higher scores indicate higher medication adherence (Holstad et al. 2010).

Data Analysis Procedures

Data were analyzed using the SPSS 17.0 statistical software package. Descriptive statistics, including means, standard deviations, frequencies, and cross-tabulations were calculated to describe the sample. Two-tailed independent samples *t*-tests were used to examine the differences in mean instrument scores between women from the GBL study and women from the KHARMA project. Bivariate correlation and hierarchical regression analyses were used to address the study hypotheses.

Sample—Based on statistical power analysis using NCSS-PASS, a sample size of 125 was sufficient to achieve 99% power to test the most parsimonious regression model and to detect an R^2 of 0.15 attributed to three independent variables (CES-D, CD4 count, EWB) using an *F*-Test at the $\alpha=.05$ significance level and adjusted for an additional two independent control variables. Women included in this analysis were recruited into the studies using non-random sampling. Only baseline (pre-intervention) data were used. Two-sided alphas are reported.

The total sample included 129 HIV-positive women, 118 of whom were African American. This analysis included only the sub-sample of HIV-positive African American women. The total sample included 72 of the women from the GBL study ($N=247$), which included 79 women and 168 men, and the first 57 women from the KHARMA Project ($N=207$) that were recruited by the analysis time in January 2006. For the GBL project, a non-random sample of 247 participants were recruited. Of the 247, 79 were women, 90% of whom were African-American. Initially, 79 of the women from the GBL study were eligible for inclusion in the analysis, but 7 of the women also participated in the KHARMA project and were excluded. No significant mean group differences were observed in sociodemographic characteristics, SWB, EWB, RWB, depressive symptoms, CD4 count, or HRQOL between women in the GBL project and women in the KHARMA project or between women who met inclusion criteria and those who did not.

Sample characteristics are presented in Table 2. The total sample was predominantly African-American so the remaining 11 non-African American women were excluded from

the analysis. The mean age for the sample was 42 (SD 8.41) years. The mean CD4 count for the sample was 298 cells/ μ L (SD 223.80) and the mean HIV viral load was 14,185 copies/ml (SD 43.26). Mean instrument scores are presented in Table 2. This sample had a mean depressive symptom score of 15.25 (10.0) on the CES-D scale which was slightly below the cut score of 16. Less than half of the sample (43.4%, $n=56$) were at risk for clinical depression (CES-D $\geq$ 16). Mean RAND 36 HRQOL subscale scores varied, with the lowest for the role limitations due to emotional health scale at 41.7 (39.9), followed by a moderate mean score on the energy/fatigue scale at 54.5 (22.1), ranging to the highest mean score of 69.7 (20.1) on the emotional well-being scale.

Less than half of the sample (40%) reported that they “*never*” or “*rarely*” attended religious services. Similarly, forty percent of the sample reported that they attended approximately once a week or more. More than half (71%) of the sample reported that they prayed or meditated daily or almost every day. Approximately one-third (35%) of the sample reported that they read religious or spiritual materials daily or almost daily. Only a very small portion of the sample reported that they never prayed or meditated (2.6%) or reported that they never read religious or spiritual materials (6.0%). Despite a variation in spiritual and religious practices found, a majority (82.2%) of the sample reported that their religious or spiritual beliefs were “*quite important*” or “*very important*” to them. Only nine percent of women in the study reported that religious or spiritual beliefs were “*not at all important*” to them. Responses indicated that participants rated themselves as having high SWB. The sample mean SWB scores and subscale scores indicated moderate to high SWB. More specifically, mean SWB, RWB and EWB, were 99.5 (15.1), 52.3 (7.7), and 47.3 (8.6), respectively (Table 3).

Regression Procedures—Hierarchical regression statistics were computed to identify significant predictors of physical and mental HRQOL composite scores. Prior to running the regressions, a variety of tests, statistics and plots were used to assess whether or not regression assumptions were violated. Diagnostics were conducted to check the homoscedasticity, normality, independence, and linearity assumptions. Shapiro-Wilk normality tests indicated that age and EWB were the only normally distributed variables. Nonetheless, residuals were normally distributed and no problems with hetero-scedasticity, multicollinearity, or autocorrelation were found. Simple scatterplots showed linear relationships between independent and dependent variables.

The enter method of multiple linear regression was used. Two-tailed Spearman’s Rho correlation statistics were conducted to identify covariates to be included in the regression model. Variables that were significantly correlated with HRQOL in bivariate analyses or socio-demographic or clinical variables theoretically associated with HRQOL were included in the analysis (Table 4). In addition to EWB and RWB, these variables included age, education, marital status, years receiving HIV care at infectious disease (ID) clinic, HIV medication adherence, depressive symptoms, CD4 cell count and percentage, and HIV viral load (log).

Physical and mental composite scores of HRQOL were calculated and transformed linearly into T scores as recommended by RAND researchers (Hays et al. 1993). The physical health composite score is comprised of physical function, role limitations due to physical health, bodily pain, and general health subscale scores (Hays et al. 1993; McHorney et al. 1993). The mental health composite score is comprised of vitality (energy/fatigue), social functioning, role limitations due to emotional or personal problems, and emotional well-being subscale scores (Hays et al. 1993; Ickovics and Chesney 1997). In the first hierarchical regression model, the physical health composite score of RAND36 HRQOL was regressed on socio-demographic variables, the two measures of medication adherence,

depressive symptoms, RWB, CD4 count and percentage, HIV viral load (log), religious well-being and existential well-being. Variables were entered into the model in blocks.

The socio-demographic variables were entered in the first block, HIV medication adherence variables were entered in the second block, depressive symptom score, CD4 cell count and percentage and HIV viral load (log) were entered in the third block, RWB was entered in the fourth block, and existential well-being was entered in the fifth block. All variables were successfully entered into the model. The second regression model used similar procedures and blocks to regress the mental health composite score of RAND36 HRQOL on the same blocks of variables previously described. The regression results for the prediction of physical health composite scores are presented in Table 5 and regression results for the prediction of the mental health composite are presented in Table 6. Regression model fit statistics (F , F Change, R^2 , Adjusted R^2 , and R^2 Change) were used to identify significant results.

Results

Predicting RAND HRQOL Composite Scores

These results (Table 5) address the study hypothesis (H1) that EWB will contribute a significant amount of variance in physical HRQOL, beyond what is explained by RWB, depressive symptom score (CES-D), and immune status (CD4 count/percentage and HIV viral load), controlling for socio-demographic variables and medication adherence. In the model estimating the RAND-36 physical health composite score, the results indicate that EWB ($\beta = .74$; $p = .014$) was the only significant predictor of the physical health composite score of HRQOL. The results indicate a significant positive association between EWB and physical HRQOL such that for every unit increase in EWB, the physical health composite of HRQOL increased by .74 units. The F -test for the full model was significant ($F = 2.52$; $p = .016$), indicating that the “fit of the model” was supported and 27.6% of the variance (Adjusted R -Square = .276) in the physical health composite score of HRQOL was explained, with a standard error of 8.43. Existential well-being contributed to the model and accounted for 10.0% more unique variance (Full model R^2 change = .100) in the physical health composite score of HRQOL than depressive symptoms, CD4 count and percentage and HIV viral load alone, controlling for socio-demographic variables and HIV medication adherence.

The regression results for the prediction of mental health composite scores are presented in Table 6. These results address the study hypothesis (H2) that EWB will contribute a significant amount of the variance to mental HRQOL beyond what is explained by RWB, depressive symptoms, and immune status (CD4 count and percentage and HIV viral load), controlling for socio-demographic variables and HIV medication adherence.

The full model including all five blocks was statistically significant ($F = 4.14$, $p = .0001$) and explained 44.0% of the variance (Adjusted R -square = .440) in the mental health composite score of RAND 36 HRQOL, with a standard error of 7.30. The results indicate that depressive symptoms ($p = .004$) and EWB ($p = .026$) were the only significant predictors of the mental health composite score of HRQOL. The results show a significant inverse association between EWB and mental HRQOL such that for every unit increase in depressive symptoms, the mental health composite of HRQOL decreased by .40 units ($\beta = -.40$) and that EWB was significantly positively associated ($\beta = .57$) with the mental health composite of HRQOL. Existential well-being explained 6.3% (R -square change = .063) additional unique variance in the mental health composite score of RAND 36 HRQOL than was explained by the variables entered in the previous steps, including additional variance beyond depressive symptoms.

Discussion

This study highlights the importance of spiritual beliefs and the role of EWB in the HRQOL of a sample of African American women living with HIV, which is consistent with the literature that emphasizes spirituality and religion's importance among women living with HIV (Giger et al. 2008; Polzer Casarez and Miles 2008) and Blacks (Chester et al. 2006; Giger et al. 2008; Braxton et al. 2007; Polzer Casarez and Miles 2008). Spirituality and religion have traditionally played a major role within African American communities (Chester et al. 2006; Giger et al. 2008) and have contributed to their quality of life (QOL) and are also very important among African Americans living with HIV disease (Coleman and Holzemer 1999).

The engagement of many of the women in the study more frequently in private religious practices (*i.e.* prayer, reading spiritual/religious materials) than public religious practices (church attendance) is an interesting finding that warrants further exploration. Tarakeshwar and colleagues (2006) found that individuals with HIV practiced spirituality in a variety of ways that did not always include organized religion. Similarly, Cotton and colleagues (2006) found that only 23% of patients with HIV/AIDS participated in organized religion on a regular basis (once a week or more). Persons with HIV may embrace spirituality more than religion due to perceptions or experiences of HIV-related stigmatization by mainstream religious traditions (Koenig and Cohen 2002). In a review of the literature, Hall (1998) noted that due to stigmatization, organized religion, such as church attendance, served as a barrier to attaining spirituality among men and women with HIV.

Overall, these findings highlight the importance of spiritual/religious beliefs and practices among people living in the "bible belt" region of the U.S. and among a sample of African Americans, for whom spirituality has traditionally played an important role. However, they also suggest that for some HIV-positive African American women organized religion (*i.e.* church attendance) may not be as relevant (Cotton et al. 2006; Tarakeshwar et al. 2006) as private spiritual/religious practices (*i.e.* prayer, spiritual/religious reading) or other methods of spirituality (*i.e.* meaning and purpose in life) (Dalmida et al. 2009). This discrepancy between importance of spirituality and church attendance may be due to HIV-related stigma as noted by some authors (Hall 1998; Koenig and Cohen 2002; Nelson et al. 2002) or possibly a lack of transportation, preference for private versus public religious/spiritual expression or other reasons that need to be investigated further.

This study added useful information to the literature about the HRQOL of African-American women living with HIV and use of the RAND-36 scale within this population. On average, the sample had moderate mean scores on the 8 dimensions of RAND HRQOL. The women had the highest mean scores on RAND emotional well-being and social functioning. The lowest mean score was on the role limitations due to physical functioning subscale. These findings suggest that the emotional and social components of HRQOL, which may not be directly affected by HIV disease, are higher than components that may be directly affected or limited by advanced disease course, such as physical functioning. Physical health and immune function have been identified as important factors in predicting HRQOL among people living with HIV. Others have noted that that increases in CD4 cell counts, initially and over time, are associated with improvements in HRQOL (Weinfurt et al. 2000) among people living with HIV. CD4 cell count was not a statistically significant predictor of HRQOL in this study, but the association did approach a level of significance. The lack of this finding in this study may be explained by the lack of variability in CD4 cell counts among the sample and the cross-sectional design of the study that, unlike a longitudinal design, is unable to measure changes in CD4 cell counts over time.

Improvement in HRQOL may occur in response to improvements in physical or psychological well-being, therefore, in addition to treating HIV disease itself psychological functioning needs to be strengthened and depression treated to facilitate effective coping and to enhance HRQOL among HIV-infected persons (Nannis et al. 1997). It is also important to note that the findings of this study indicate that the existential well-being component of SWB was able to explain variance in both physical health and mental health composites of HRQOL beyond what was predicted by depressive symptoms.

Overall, the findings support previous research regarding the positive or beneficial association between EWB and HRQOL (Fryback and Reinert 1999; Rabin 1999) among people with HIV/AIDS (Sowell et al. 2001; Tuck et al. 2000). EWB was significantly positively associated with both the physical health and mental health composites of HRQOL and accounted for a significant amount of unique variance above and beyond that accounted for by RWB, depressive symptom scores, CD4 cell count and percentage, viral load, HIV medication adherence and sociodemographic variables included. It is also important to note that this association demonstrated that the EWB component of SWB, which pertains to existential aspects such as meaning and purpose in life, helped to explain unique additional variance in both mental and physical HRQOL components beyond the RWB component of SWB, which pertains to a relationship with or ideas about God. The results suggest that the beneficial aspects of spirituality, namely existential well-being, may be mostly related to one's existential ability to internally search for meaning, place illness in a broader context, and accept circumstances (Nelson et al. 2002). Spiritual well-being may enable a means to cope with stress, a sense of meaning and purpose in life, and a sense of connection to the transcendent or to others.

Limitations

This study's cross-sectional design limits our ability to make causal inferences. Although the study had a small sample size, power analysis indicated that there was sufficient power to detect statistically significant associations. There are, however, some limitations associated with combining data from two separate studies designed to examine medication adherence. Although participants were recruited primarily from the same clinic, using similar procedures and the same instruments, recruitment for the GBL study occurred several years prior to the KHARMA project. Additionally, findings about the relationship between spirituality and health may only be generalizable to HIV-infected women in the southeast and those who identify as being spiritual, engage in spiritual practices, or engage in ways that add meaning and purpose to their life. Study findings may also only be generalizable to clients other than low to moderate income HIV-infected African-American women on antiretroviral therapy. However, the study sample reflects national and state data. Within the U.S., HIV-infected women are primarily African-American (64–67%), 25% of whom are low-income (Center for Disease Control and Prevention 2008). Similarly, in Georgia, approximately 84% of women with HIV are African-American (Georgia Department of Human Resources 2008).

In spite of the limitations discussed, this study provides beneficial information about the association between spiritual well-being and HRQOL among a sample of African American women living with HIV/AIDS. This study provided support for the proposed hypotheses. Findings indicated that spirituality is used as a resource, is related to health and healing, and is associated with the physical and mental health dimension of HRQOL among HIV-positive African American women.

Clinical Implications

The findings of this study support the need for the incorporation of spiritual assessment into patients' plan of care as recommended by the US Joint Commission on the Accreditation of Healthcare Organizations (Mueller et al. 2001). This information may help to identify measures that may potentially facilitate improvements in HRQOL among women with HIV and should encourage health care providers, spiritual care practitioners and mental health providers to collaborate together more often in order to coordinate a multidisciplinary approach to individualized patient care that may include aspects of spirituality, as appropriate (Dalmida 2006). Acknowledging and supporting patient spirituality may enhance overall patient care (Mueller et al. 2001) and facilitate coping, healing, and health promotion (Musgrave et al. 2002). Therefore, HIV-positive women who would like to include spirituality into their care can be empowered to become active participants in their overall plan of care (Dalmida 2006). Where appropriate, efforts should be made to enhance spiritual well-being, namely existential aspects such as meaning and purpose in life, among women living with HIV to facilitate improvements in HRQOL. The findings of this study supported an association between SWB and HRQOL and future investigation is needed to identify other important variables and mediators in the relationships among spirituality and HRQOL in African American women living with HIV/AIDS.

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Table 1

Spiritual being items (Ellison 1983)

Religious Well-Being subscale items:
I don't find much satisfaction in private prayer with God.
I believe that God loves me and cares about me.
I believe that God is impersonal and not interested in my daily situations.
I have a personally meaningful relationship with God.
I don't get much personal strength and support from my God.
I believe that God is concerned about my problems.
I don't have a personally satisfying relationship with God.
My relationship with God helps me not to feel lonely.
I feel most fulfilled when I'm in close communion with God.
My relation with God contributes to my sense of well-being.
Existential Well-being subscale items:
I don't know who I am, where I came from, or where I am going.
I feel that life is a positive experience.
I feel unsettled about my future.
I feel very fulfilled and satisfied with life.
I feel a sense of well-being about the direction my life is headed in.
I don't enjoy much about life.
I feel good about my future.
I feel that life is full of conflict and unhappiness.
Life doesn't have much meaning.
I believe there is some real purpose for my life.

Table 2

Sample characteristics

Demographic Variable	n	%	M	SD	Range
Age	118		42.22	8.41	24–84
CD4 cell count	99		298.21	223.80	15–944
CD4 cell percentage	99		16.69	9.54	2–50
HIV Viral load (x 1000copies/ml)	108		14.18	43.26	.05–342
Years receiving care at current clinic	54		6.59	4.83	0–20
Monthly income	51		686.08	326.18	0–1600
Race/Ethnicity (of overall sample)					
Black	118	91.5			
White	6	4.4			
Hispanic	3	2.2			
Other	2	1.5			
Educational level					
No formal education	2	1.7			
Junior high or middle school	17	14.4			
High school or G.E.D.	69	58.5			
College or Technical School	24	20.3			
Graduate or Professional School	6	5.1			
Marital Status					
Married	12	10.2			
Separated/Divorced/Widowed	45	38.4			
Never married	48	37.2			
Committed relationship	16	13.7			
Employment					
No	103	87.3			
Religious Service Attendance					
Never or rarely	47	40.2			
Once or twice a month	23	19.7			
Once a week or more	47	40.2			
Prayer or Meditation					

Demographic Variable	n	%	M	SD	Range
Never	3	2.6			
1–3 times a month	14	12.0			
1–4 times a week	17	14.5			
Nearly every day	23	19.7			
Daily	60	51.3			
Reading Religious or Spiritual Materials					
Never	7	6.0			
1–3 times a month	29	25.0			
1–4 times a week	39	33.6			
Nearly every day	13	11.2			
Daily	28	24.1			
Importance of Religious or Spiritual beliefs					
Not at all important	11	9.3			
Slightly important	3	2.5			
Moderately important	7	5.9			
Quite or Very important	97	82.2			

Table 3

Mean instrument scores

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	Range
AGAS (Ease of antiretroviral Adherence)	112	25.38	4.78	9–30
CES-D (Depressive symptoms)	118	15.25	10.01	0–48
ACTG (HIV medication Non-Adherence)	118	34.96	8.36	1–42
Religious well-being	118	52.26	7.71	29–60
Existential well-being	118	47.27	8.59	22–60
Spiritual well-being total	118	99.53	15.11	56–120
RAND36-physical functioning	118	61.61	29.71	0–100
RAND36-role limits due to physical health	118	42.80	40.44	0–100
RAND36-role limits to emotional health	117	56.13	40.51	0–100
RAND36-energy/fatigue	118	56.57	20.94	5–100
RAND36-emotional well-being	118	71.56	18.55	28–100
RAND36-social functioning	118	68.33	25.35	0–100
RAND36-pain	118	67.46	25.49	0–100
RAND36-general health	118	58.70	21.79	10–100

Table 4

Bivariate correlations of covariates with physical and mental HRQOL

	Physical Health Composite HRQOL <i>r</i> (<i>p</i> value)	Mental Health Composite HRQOL <i>r</i> (<i>p</i> value)
Age	-.16 (.086) ^	.04 (.641)
Education (HS or less)	.10 (.300)	.09 (.331)
Marital Status (Single)	-.02 (.866)	.02 (.868)
Years Receiving HIV Care at clinic	.09 (.524)	-.02 (.916)
ACTG HIV medication adherence	.33 (.000)**	.39 (.000)**
AGAS HIV medication adherence	.21 (.027) *	.18 (.056) ^
Depressive symptoms	-.51 (.000)**	-.69 (.000)**
CD4 cell count	.07 (.491)	-.04 (.733)
CD4 cell percentage	.09 (.428)	-.07 (.525)
HIV Viral load (log)	-.04 (.717)	-.06 (.523)
Religious well being	.28 (.002)**	.31 (.001)**
Existential well being	.37 (.000)**	.45 (.000)**

Two-tailed tests:

^
 $p \leq .10$,*
 $p \leq .05$,**
 $p \leq .01$

Table 5

Regression analysis for health-related quality of life physical health composite

Independent Variables	β eta ^a	Standardized β eta	p value	R-Square	Adjusted R-Square	R-Square Change
Block 1				.034	-.053	.034
Age	-.27	-.23	.126			
Marital Status	-6.34	-.29	.071			
Education	-.49	-.02	.872			
Yrs HIV Care	-.50	-.25	.110			
Block 2				.209	.096	.174
AGAS	.45	.25	.150			
ACTG	.01	.01	.958			
Block 3				.336	.161	.127
Depressive symptom	-.08	-.10	.578			
CD4 count	.02	.40	.080			
CD4 percentage	-.36	-.36	.117			
HIV Viral load (log)	-1.24	-.14	.342			
Block 4				.356	.165	.020
Religious well-being	-.23	-.18	.376			
Block 5				.457	.276	.100
Existential well-being	.74	.62	.014			

R^2 , Adjusted R^2 and R^2 change are reported for each step in the model and include the block of variables in that step and previous steps

^a β etas and p-values reported are from the full model

Table 6

Regression analysis for HRQOL mental health composite score

Independent Variable	β	η^2 ^a	Standardized β	η^2	p value	R-Square	Adjusted R-Square	R-Square Change
Block 1						.015	-.075	.015
Age	-.10		-.08		.525			
Marital Status	-3.55		-.17		.236			
Education	.67		.03		.799			
Yrs HIV Care	-.45		-.22		.100			
Block 2						.181	.064	.167
ACTG	-.07		-.06		.729			
AGAS	.32		.18		.239			
Block 3						.500	.369	.319
Depressive symptoms	-.40		-.46		.004			
CD4 count	.01		.05		.788			
CD4 percentage	-.09		-.09		.642			
HIV Viral load (log)	-.83		-.09		.464			
Block 4						.517	.373	.016
Religious Well Being	-.15		-.13		.489			
Block 5						.580	.440	.063
Existential Well Being	.57		.49		.026			

R^2 , Adjusted R^2 and R^2 change are reported for each step in the model and include the block of variables in that step and previous steps

^a β etas and p-values reported are from the full model