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Assessing the Role of Spirituality in Coping Among African Americans Diagnosed with Cancer

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Abstract

Spirituality plays an important role in cancer coping among African Americans. The purpose of this study was to report on the initial psychometric properties of instruments specific to the cancer context, assessing the role of spirituality in coping. Items were developed based on a theoretical model of spirituality and qualitative patient interviews. The instruments reflected connections to self, others, God, and the world. One hundred African American cancer survivors completed the instruments by telephone. The instruments showed adequate internal reliability, mixed convergent validity, discriminant validity, and interpretable factor structures.

Keywords

Spirituality; Cancer coping; Quality of life; African American; Instrument development

Introduction

African Americans have higher cancer mortality rates than other racial/ethnic groups for all cancer sites (American Cancer Society 2010). Due to advances in early detection and treatment, people are now living longer after a cancer diagnosis, making survivorship and coping issues more salient (Committee on Psychosocial Services to Cancer Patients/Families

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in a Community Setting 2008). When a serious illness such as cancer occurs, people, particularly those with a faith background such as African Americans (Mattis and Jagers 2001; Noel and Johnson 2005), often reach out to their spiritual foundations to cope (Simon et al. 2007; Gibson and Parker 2003). Spirituality has been proposed for inclusion in quality of life models in oncology research (Brady et al. 1999).

The present study reports on the initial validation of four related instruments assessing constructs involving the perceived role of spirituality in cancer coping in an African American patient sample. The overall study was conducted in two a priori planned phases. In phase one, African American men and women with a diagnosis of cancer completed semi-structured interviews to discuss the role of spirituality in their cancer experience (reported in Schulz et al. 2008). These data were utilized, along with theoretical guidance, to develop the instruments that were tested in the present study, which constitutes Phase 2 of the research.

The unique element was that the present theory-based instruments were developed specifically for use in the cancer context and were based on qualitative data, with an African American population, which is uniquely impacted by cancer disparities. The instruments cover new conceptual territory through the focus on cancer and the specific nature of the role of spirituality in coping with the disease, conceptualized as meaningful connections to self, others, a higher power, and the world (Schulz 2004, 2005, 2008). Grounded theory methods (Glaser 1992) were used to analyze the data. This use of qualitative data for instrument development is recommended when creating novel instruments (Jenkins and Pargament 1995; Krause 2002). This resulted in several important themes for which no existing *cancer-specific* instruments could be identified in the present literature. Participants in Phase 1 expressed the importance of their relationship with God in coping with cancer, relying on and conversing with God, and seeking God's presence in times of need. They expressed connections to others in terms of family members, friends, the church family, and their treatment team. Connections to self were expressed as increased self-understanding, self-love, becoming a better person, and gaining a new perspective on life as a result of going through cancer. Connections to the world involved helping others, giving to charity, volunteering, and helping others with cancer.

Spirituality as a Construct

Spirituality is a part of African American culture that is viewed as central in daily life (Mattis and Jagers 2001). Spirituality is often involved in the process of creating and maintaining relationships in the African American community (Mattis and Jagers 2001). It is often useful to distinguish spirituality from a similar construct of religiosity or religious involvement. Religiosity is generally recognized to involve structured worship and practice (Jenkins and Pargament 1995) as well as theological beliefs. Thoresen (1998) defined religion as involving organized worship including beliefs, practices, and rituals. Spirituality is more difficult to operationalize and there is less agreement in the literature as to the definition of this construct. Spirituality may involve transcendent experiences and search for meaning and purpose, which may or may not include religion (Jenkins and Pargament 1995). Though some disagreement exists in the field, religiosity is viewed by some as a component of spirituality, with spirituality being the more broad construct.

Based upon a literature review, Schulz (2004) defined spirituality as experiencing a meaningful connection to our core selves, others, the world, and/or a greater power. Schulz's 3-Dimensional Model of Spirituality (Schulz 2004, 2005, 2008), which provides the conceptual framework for the present research, is based on this definition. The data collected in Phase 1 were consistent with this model, which was utilized to organize the data and guide the item development for the current instruments.

Assessing Spirituality in the Context of Illness

Mytko and Knight (1999) reviewed a number of measures of religiosity and spirituality in the context of cancer quality of life research. While some had been utilized with patient samples and most had reliability and validity data, they reported none had been developed specifically for use in the cancer context, with theoretical grounding and based on a qualitative foundation. In addition, none were specifically designed for use with African American patients. It was concluded that religiosity and spirituality play an important role in coping with cancer, and that instruments to assess these constructs be included in quality of life studies due to the need to understand the role of body, mind, and spirit among individuals with cancer (Mytko and Knight 1999). Following is a brief review of previous research on spirituality and cancer coping, organized by the dimensions of spirituality based on the current theoretical model. In several cases, existing instruments cover several of the dimensions (e.g., self and others) in a single instrument or subscale.

Connections to Higher Power/God—Spirituality, assessed using the Spiritual Well-Being Scale that reflects religious and existential well-being (Paloutzian and Ellison 1982), has been found to be positively associated with quality of life and health outcomes among cancer patients, and facilitates cancer coping (Laubmeier et al. 2004). In a sample of African American women with breast cancer, the women experienced increased hope through their spirituality as assessed using the Spiritual Perspective Scale (Reed 1996) and higher levels of psychological wellbeing (Gibson and Parker 2003). In a qualitative study, three spiritual themes were elucidated among men coping with prostate cancer, involving prayer, coping with cancer, and support (Walton and Sullivan 2004). In a multiracial sample of women with breast cancer, some women reported that their faith had grown, while others reported that they had questioned their faith during the cancer experience (Levine et al. 2007). Individuals with cancer have reported increases in their frequency of prayer, church attendance, and increased faith (Moschella et al. 1997), and spirituality became more important to cancer patients (Wagner 1999).

Perhaps the only illness-specific measure of spirituality identified was the Functional Assessment of Chronic Illness Therapy—Spiritual Well-Being Scale (FACIT-SP). The FACIT-SP contains two subscales (meaning and peace; faith) as well as a total score. This instrument references illness and has been used with medically ill populations (Peterman et al. 2002). However, the instrument is not cancer specific; it does not include items that reference the cancer experience or context.

Connections to Self, Others, and the World—Those with cancer report spiritual needs such as finding meaning in their disease and suffering (Kappeli 2000), having hope, and access to spiritual resources (Moadel et al. 1999). African American women with breast cancer have reported that during the diagnosis phase, spirituality helped with acceptance, treatment decision making, and family support (Simon et al. 2007). Spirituality later helped the women to cope with the treatment and in the meaning-making process. The women reported increases in their levels of spirituality. After treatment, spirituality provided help in coping with fear of cancer recurrence and adapting to treatment effects. Post-traumatic growth reflects the process of gaining an inner strength in the face of a trauma (Tedeschi and Calhoun 1996), which can involve changes in one's relationships with others. As previously discussed, the Phase 1 qualitative work suggested a role of meaningful connections to self, others, and the world in cancer coping. However, no existing instruments were identified that assessed these constructs specific to their role in cancer survivorship.

Rationale for Instrument Development

With the presentation of new spirituality instruments specific to the cancer context, the question must be asked of whether it would be more appropriate to adapt an existing instrument for use with cancer patients. Though in some cases this can be accomplished, in this instance, this solution may produce an instrument that neglects important contextual factors relevant for assessing spirituality in cancer coping. For example, it is one approach to adapt a set of items (e.g., “I ask for God’s help in the midst of daily activities.”) to be cancer specific (e.g., “I ask for God’s help in dealing with my cancer.”). However, a more systematic approach is to use existing theory for guidance and build on a solid qualitative foundation. This foundation is used to identify the important ways in which patients are using spirituality in coping with the disease, such as through gaining self-acceptance, making meaning of the disease (e.g., “why me”), finding out who their true friends are, experiencing stress reduction through a relationship with God, and giving back to others with cancer. In this way, the qualitative research is critical to fully informing instrument development, ensuring that we are able to “ask the right questions”. Without a qualitative foundation, these important areas may be missed.

The Present Study

Previous research in the role of spirituality in cancer coping has typically operationalized spirituality as general spirituality (e.g., spiritual well-being), and there has also been considerable work on religious coping (Phillips et al. 2004; Pargament et al. 1988, 2001). These constructs reflect the connections to higher power dimension. Less work has been done on the other elements of spirituality including meaningful connections to one’s self, others, and the world, particularly in the context of cancer. Post-traumatic growth shares some conceptual similarity with the present work; however, the present instruments are more inclusive and again are specific to the cancer context. The present study reports on instruments *specific to the cancer context* to assess the role that spirituality plays in coping among African Americans. Instruments that provide the ability to assess some of these complex phenomena can help bring the field further in terms of both research and practice. If more could be learned about the specific role of spirituality in cancer coping, faith-based support efforts could be better informed and more effective.

Method

Sampling and Participant Eligibility

The research protocol was approved by the Institutional Review Board at the University of Alabama at Birmingham. Eligible individuals were screened using a telephone script and were African American adults who had been diagnosed with cancer at least 6 months ago but not more than 5 years ago. Other details can be found elsewhere (Holt et al. 2009). Five years was the upper limit for time since diagnosis because after this period, patients are generally considered to be in remission and coping may take on a different meaning. Patients were not eligible until 6 months post-diagnosis, to allow for treatment and out of respect for the patient’s initial adjustment period. Patients with cancer of any site were eligible, with the exception of non-melanoma skin cancer, which is generally less severe and not life-threatening.

The recruitment strategy included the media, such as local African American radio stations and newspapers. Several oncologist offices, key community leaders, and other community organizations also provided assistance with recruitment. No eligible individual who was invited to participate refused to do so. Nine individuals were ineligible, eight of whom were diagnosed outside of the eligibility window, and one individual was found not to have had

cancer. Another individual was eligible but was deemed incapable to participate due to the health condition.

Data Collection

An African American female interviewer was trained in the telephone interview protocol and in the sensitivity required for interviewing patients about topics such as spirituality and cancer coping. Those who were interested in participating called the interviewer who screened them for eligibility criteria. Interested and eligible individuals completed the interview at this time or scheduled an appointment to do so.

Interviews began with a verbal informed consent script in which the participant was provided with an opportunity to ask questions about the project. The structured interview began with questions about the role of support from others in the cancer experience, moved gradually into questions of a more spiritual nature, and ended with a standard demographics module. Participants received a $25 incentive by mail. Sample demographic characteristics are shown in Table 1.

Measures

Four instruments were developed based on Phase 1 qualitative work that identified specific spiritual constructs important in cancer coping (Schulz et al. 2008) and were aligned with Schulz's 3-Dimensional Model of Spirituality (Schulz 2004, 2005, 2008). Item development generally followed a systematic process as described by Krause (2002). The investigative team drafted items to represent the constructs that emerged in the previous qualitative phase. The team drafted items for each construct guided by the Phase 1 qualitative work and the theoretical model. The resulting pool of items were then reviewed for content validity and edited in an iterative process. The instruments were pilot tested with a small sample to assess the logistics for telephone administration. They were then finalized for the full validation sample. The instrument characteristics are presented in Table 2, and items are listed in Table 3. All items used a 4-point Likert-type scale (strongly disagree…strongly agree).

Connections to Self—This construct reflects ways in which patients experience a more meaningful connection to themselves as a result of having had cancer. This may involve increased self-understanding, becoming a better person, increased self-honesty, or increased self-love. The instrument consists of seven items assessed on a 4-point Likert-type scale (strongly disagree…strongly agree). All four connections scales used this response format.

Connections to Others—This construct reflects the meaningful, positive connections to others that cancer patients perceive as being important in their coping experience. These others may include family members, friends, the church family, other cancer patients, or members of the treatment team. This scale included ten items.

Connections to God—This construct reflects patients' connection or relationship with God experienced through a variety of ways. This may involve increased closeness with God, the importance of having a relationship with God when coping with cancer, and a desire to seek God's presence. This scale included eight items.

Connections to World—This construct reflects several ways in which patients may experience meaningful connections to the world, including helping others, giving to charity, volunteering, and giving others with cancer a better cancer experience than they had. This scale included seven items.

Instruments Used to Assess Convergent and Discriminant Validity—General spirituality was assessed using the Functional Assessment of Chronic Illness Therapy—Spiritual Well-Being Scale (FACIT-SP), which is a 12-item instrument widely used in medically ill populations (Peterman et al. 2002). The FACIT-SP contains two subscales (meaning and peace; faith) as well as a total score; the total score was used in the present analysis. The instrument has been illustrated to have strong internal reliability (α = .81 to . 88) and was positively associated with quality of life. It has also been shown to have convergent validity with measures of religion and spirituality in cancer patient samples. Though a general spirituality instrument was used to assess convergent validity, there were no other available instruments that are conceptually equivalent to the new instruments for comparison. Therefore, it was expected that the correlations would be significant, but not in the range typically expected when comparing two equivalent constructs.

Negative affect was assessed using the Positive and Negative Affect Schedule (PANAS; Watson et al. 1988). The PANAS consists of 20 emotions (10 negative; 10 positive), and participants are asked to rate the extent to which they have felt that way in the past week on a 5-point Likert-type scale (very slightly or not at all…extremely). Internal reliability was high for the negative affect scale (α = .84 to .87). Test–retest reliability for 1 year was .60 and for a few weeks was .48. The scale also showed factorial, convergent, and discriminant validity. Nonsignificant or negative correlations were anticipated between this construct and the new instruments. Negative affect was selected for assessment of discriminant validity because there was no theoretical or conceptual reason to expect that the construct would be positively associated with spiritual aspects of cancer coping, therefore these would be distinguishable constructs.

Data Analysis

Internal reliability was assessed using Cronbach's alpha. Item-total scale correlations were assessed. Convergent validity was examined through assessment of correlations with a measure of spiritual well-being (Peterman et al. 2002). Discriminant validity was examined through assessment of correlations with negative affect (Watson et al. 1988). Instrument factor structure was explored using principal components analysis with promax rotation. The oblique rotation was used because the factors were expected to be correlated with each other. An exploratory approach was taken because it was not known in advance how many factors to expect within each scale. Eigenvalues, scree plots, and percentage of variance accounted for were examined. While each of these methods has limitations (Stellefson et al. 2009), there were clear indications from these data sources that informed the factor retention decisions. It is recommended that multiple strategies be used when making these decisions (Stellefson et al. 2009). Finally, a parallel analysis was conducted in order to inform the number of factors to be retained. Parallel analysis is a technique that uses eigenvalues derived from random data, which are compared to the study data. It is regarded by some as more accurate for informing decisions as to how many factors to retain (Patil et al. 2010). A separate factor analysis was conducted for each instrument because the overall study sample size (N = 100) was inadequate to combine the four instruments (N = 32 items total) into a single analysis.

Results

The instruments exhibited adequate internal reliability as evidenced by Cronbach's alphas in the .80 neighborhood (see Table 2). Table 3 shows item-total correlation statistics as well as the factor analysis results. Most items showed acceptable item-total correlations; however, there were a couple of items in which item-total correlations were low (e.g., "During my cancer experience, I found out who my friends really are."; "Having a strong relationship

with God has decreased my stress during the cancer experience."). Convergent validity was evidenced through significant correlations with spiritual well-being (see Table 4). The exception was for the Connections to Self scale, in which the correlation was not significant. Discriminant validity was evidenced through nonsignificant correlations with negative affect.

The results of the principal components analyses were generally interpretable and informative. For each subscale, the parallel analysis supported the number of factors extracted. The exception was for the Connections to Others subscale (discussed later). The factor structure of the Connections to Self scale was unidimensional in nature. The single factor accounted for 56.90% of the variance and had an eigenvalue of 3.98 (see Table 3). The principal components analysis for the Connections to Others scale revealed a threefactor solution (eigenvalues 3.50, 1.53, 1.08, respectively), with a total of 61.08% of the variance accounted for (15, 15.29, and 10.80%, respectively). The first factor appeared to involve items reflecting meaningful relationships including those with family, the second more specifically involved friendships including those with other patients, and the third was reflective of relationships with other church members or a Pastor/minister. The parallel analysis suggested a two-factor solution. However, when the two-factor solution was examined, it was not as interpretable as the three-factor solution; the latter showed a separate factor for items reflecting the role of church members or a Pastor/minister that were combined with family items in the two-factor solution.

The analysis for the Connections to God scale revealed a two-factor solution (eigenvalues 3.72 and 1.44, respectively), with a total of 64.48% of the variance accounted for (46.54 and 17.94%, respectively). The first factor appeared to involve items reflecting the role of God in helping one to cope with cancer, and the second reflected the increased closeness of one's relationship with God as a result of the cancer experience. The analysis for the Connections to World scale reflected a two-factor solution (eigenvalues 3.13 and 1.08, respectively), with a total of 60.03% of the variance accounted for (44.67 and 15.35%, respectively). The first factor contained items reflecting giving back to society in various ways, while the second involved assistance provided specifically to other cancer patients. There was one ambiguous factor loading for an item that assessed giving back to society. Table 4 shows correlations between all scales and subscales.

Discussion

The current analysis suggests that the four instruments developed to assess the role that spirituality plays in the cancer experience among African Americans showed adequate initial internal reliability, mixed convergent validity, discriminant validity, and generally interpretable factor structures. The exception is one item on the Connections to World scale that had an ambiguous factor loading, which in practice could be eliminated from administration and/or scoring. The convergent validity coefficient with the Connections to Self scale and general spirituality was not significant. However, Connections to Self is part of the 3-Dimensional Model of Spirituality (Schulz 2004, 2005, 2008), and part of what participants experienced as a spiritual transformation through the cancer experience (Schulz et al. 2008). This construct does not share the overlapping content domain with the FACIT-SP involving meaning and peace, and faith elements. Therefore, it may not be surprising that the correlation with Connections to Self was not significant. The convergent validity coefficients are reasonable given that the two instruments assess similar, but not identical, constructs. Though the internal reliability coefficients were reasonable, they do reflect the multidimensionality of the instruments. The exception is the Connections to Self scale that has a higher coefficient and was also unidimensional.

The factor structures involved in some of the scales reflect the complex nature of the constructs. For example, the Connections to Others scale showed a three-factor solution when using eigenvalue and scree plot criteria but a two-factor solution when using parallel analysis. Both solutions were examined, and the three-factor solution was consistent with the qualitative foundation on which the instrument was developed, reflecting meaningful connections to family members, friendships, other cancer patients, and the church family (Schulz et al. 2008). The important role of social support has been documented in previous research among cancer patients in terms of its role in quality of life (Mellon and Weiss 2006). Others reported on the importance of support from organizations and institution staff (Landmark et al. 2002) as well as family and friends (Jones et al. 2008). While the factor involving the role of church family and clergy contained only two items, which may not be viewed as a sufficient number, this factor was retained in light of the literature supporting the unique role of religious support from one's fellow church members and Pastors/ministers (Fiala et al. 2002). Finally, the third factor was retained in light of the recommendation that theory and previous research be considered in factor retention decisions, and that underextraction is generally considered a more serious error than overextraction (Stellefson et al. 2009).

The structure for the Connections to God scale showed a two-factor solution. This is also consistent with the Phase 1 qualitative work, reflecting one's relationship with God in the context of coping with cancer, and the desire to become closer to God as a result of the cancer experience (Schulz et al. 2008). The multidimensional nature of the Connections to God scale is consistent with other multidimensional instruments involving the role of one's relationship with God in coping or a health context, Pargament's religious coping construct (Phillips et al. 2004; Pargament et al. 1988, 2001).

The structure for the Connections to World scale showed a two-factor solution. This is consistent with the Phase 1 qualitative work, reflecting concepts such as helping others, giving back to society, and helping others with cancer (Schulz et al. 2008). The representation of Connections to World is similar to, but not the same as, the construct of posttraumatic growth (Tedeschi and Calhoun 1996).

Strengths and Limitations

The present findings should appropriately be interpreted within the context of several strengths and limitations. In terms of strengths, first, the item content was based on a qualitative phase with in-depth patient interviews. This provided valid and relevant content reflecting the ways in which African Americans are using spirituality in coping with cancer. Second, the item development was based on a theory of spirituality. Third, use of a systematic and iterative process for item development is also a strength (Krause 2002).

With regard to limitations, certainly, this Alabama sample was likely to be relatively high in religious involvement. However, the means for religious involvement in the present sample were comparable to those observed in a national probability sample of African American adults (N = 2,370) who did not have cancer (religious beliefs mean = 18.91 [out of 20], religious behaviors mean = 17.68 [out of 21]; religious beliefs mean = 17.73, religious behaviors mean = 16.66, respectively; Holt and Clark 2009, unpublished data). Those experiencing religious struggle (Pargament et al. 2001; Fitchett et al. 2004) may not have been likely to participate. In addition, because data on time since diagnosis were not collected other than to determine eligibility to participate, it is not possible to use this data in analysis. The sample size, though adequate for factor analytic techniques (Guadagnoli and Velicer 1988), if larger may have provided more stable estimates. A larger sample size would also have enabled all items to be combined into a single factor analysis. However, as the correlations between the subscales indicate related but distinct constructs, this may not

be the most appropriate approach. The current analyses should be replicated in other patient samples.

Though an iterative and systematic process was used to develop these instruments using a qualitative foundation, these instruments represent an initial attempt to capture complex constructs representing the specific role that spirituality plays in cancer coping among African Americans. It is worth noting that African Americans, like other demographic groups, cannot be viewed as a homogeneous sample. This illustrates the need for replication of this work in more diverse African American samples (e.g., non-Christians) as well as in other samples. In addition, it is likely that these constructs would be applicable to non-African Americans with cancer. This is something that should be explored in future studies. The instruments could, perhaps, be modified to be used with other disease states, though the psychometric properties would have to be carefully re-examined and some items may have to be adapted or deleted to ensure relevance. Finally, these instruments contain conceptual material that may not be thought of as "spirituality" in the traditional sense, as involving transcendent experiences and search for meaning and purpose, which may or may not include religion (Jenkins and Pargament 1995). However, because the instruments were based on a multidimensional model of spirituality (Schulz 2004, 2005, 2008) that included meaningful connections to self, others, higher power, and the world, the content reflects these dimensions and therefore this, perhaps broader, definition of spirituality. Further, the instruments reflect the patient experience of the role of spirituality in cancer coping as expressed in their own words.

Conclusions/implications

These new instruments may be useful in cancer survivorship research. For example, they may provide new information as to if and how populations, particularly African Americans, are using their spirituality in coping with cancer. Scores on these instruments should be predictive of outcomes in patient populations in unique ways from existing measures of spirituality. Such prediction should be able to go above and beyond not only general spirituality but also measures of religious involvement. The instruments could be used in furthering theoretical development in spirituality and health, an area in which theory testing is needed. They could shed some additional light as to not only if spirituality contributes to adaptive coping but why and how that may be happening for patients. In practice, administration of the instruments to patient populations in the context of support groups may identify spiritual issues for discussion and spiritual therapy and/or enrichment in faith-based settings. They may also be a potential tool for use in pastoral counseling. In conclusion, there is still much to be learned about the complex role that both religion and spirituality play in coping with a disease such as cancer. Instruments that attempt to assess some of these complex phenomena can help bring the field further on both research and practice frontiers.

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References

American Cancer Society. [cited May 24, 2010] Cancer Facts & Figures for African Americans 2009–2010. Cancer epidemiological data for African Americans. 2010. Available from: http://www.cancer.org/downloads/STT/cffaa_2009-2010.pdf.

Brady MJ, Peterman AH, Fitchett G, Mo M, Cella D. A case for including spirituality in quality of life measurement in oncology. Psycho-Oncology. 1999; 8:417–428. [PubMed: 10559801]

Adler, NE.; Page, AEK., editors. Committee on Psychosocial Services to Cancer Patients/Families in a Community Setting. Cancer care for the whole patient: Meeting psychological healthcare needs. Washington, DC: National Academies Press; 2008.

Fiala WE, Bjorck JP, Gorsuch R. The religious support scale: Construction, validation, and cross-validation. American Journal of Community Psychology. 2002; 30:761–786. [PubMed: 12385482]

Fitchett G, Murphy PE, Jo K, Gibbons JL, Cameron JR, Davis JA. Religious struggle: Prevalence, correlates and mental health risks in diabetic, congestive heart failure, and oncology patients. International Journal of Psychiatry in Medicine. 2004; 34:179–196. [PubMed: 15387401]

Gibson LM, Parker V. Inner resources as predictors of psychological well-being in middle-income African American breast cancer survivors. Cancer Control. 2003; 10(5 Suppl):52–59. [PubMed: 14581905]

Glaser, BG. Basics of grounded theory analysis: Emergence vs. forcing. Mill Valley, CA: Sociology Press; 1992.

Guadagnoli E, Velicer WF. Relation of sample size to the stability of component patterns. Psychological Bulletin. 1988; 103:265–275. [PubMed: 3363047]

Holt CL, Caplan L, Schulz E, Blake V, Southward VL, Buckner AV. Development and validation of measures of religious involvement and the cancer experience among African Americans. Journal of Health Psychology. 2009; 14:525–535. [PubMed: 19383653]

Holt CL, Clark EM. Mean levels of religious involvement in a national sample of African Americans. 2009 Unpublished raw data.

Jenkins RA, Pargament KI. Religion and spirituality as resources for coping with cancer. Journal of Psychosocial Oncology. 1995; 13:51–74.

Jones RA, Taylor AG, Steeves R, Fraser G, Lippert M, Theodorescu D, et al. Family interactions among African American prostate cancer survivors. Family & Community Health. 2008; 31:213–220. [PubMed: 18552602]

Kappeli S. Between suffering and redemption. Religious motives in Jewish and Christian cancer patients' coping. Scandinavian Journal of Caring Science. 2000; 14:82–88.

Krause N. A comprehensive strategy for developing closed-ended survey items for use in studies of older adults. The Journals of Gerontology Series B: Psychological Sciences and Social Sciences. 2002; 57:S263–S274.

Landmark BT, Standmark M, Wahl A. Breast cancer and experiences of social support: In-depth interviews of 10 women with newly diagnosed breast cancer. Scandinavian Journal of Caring Services. 2002; 16:216–223.

Laubmeier KK, Zakowski SG, Bair JP. The role of spirituality in the psychological adjustment to cancer: A test of the transactional model of stress and coping. International Journal of Behavioral Medicine. 2004; 11:48–55. [PubMed: 15194519]

Levine EG, Yoo G, Aviv C, Ewing C, Au A. Ethnicity and spirituality in breast cancer survivors. Journal of Cancer Survivorship. 2007; 1:212–225. [PubMed: 18648972]

Mattis JS, Jagers RJ. A relational framework for the study of religiosity and spirituality in the lives of African Americans. Journal of Community Psychology. 2001; 29:519–539.

Mellon S, Weiss LK. A population-based study of the quality of life of cancer survivors and their family caregivers. Cancer Nursing. 2006; 29:120–131. [PubMed: 16565621]

Moadel A, Morgan C, Fatone A, Grennan J, Carter J, Laruffa G, et al. Seeking meaning and hope: Self-reported spiritual and existential needs among an ethnically-diverse cancer patient population. Psycho-Oncology. 1999; 8:378–385. [PubMed: 10559797]

Moschella VD, Pressman KR, Pressman P, Weissman DE. The problem of theodicy and religious response to cancer. Journal of Religion and Health. 1997; 36:17–20.

Mytko JJ, Knight SJ. Body, mind and spirit: Towards the integration of religiosity and spirituality in cancer quality of life research. Psycho-Oncology. 1999; 8:439–450. [PubMed: 10559803]

Noel JA, Johnson MV. Psychological Trauma, Christ's Passion, and the African American Faith Tradition. Pastoral Psychology. 2005; 53:361–369.

Paloutzian, R.; Ellison, C. Loneliness, spiritual well-being, and the quality of life. In: Peplau, L.; Perlman, D., editors. Loneliness: A source book of current theory, research, and therapy. New York: Wiley; 1982. p. 224-237.

Pargament KI, Kennell J, Hathaway W, Grevengoed N, Newman J, Jones W. Religion and the problem-solving process: Three styles of religious coping. Journal for the Scientific Study of Religion. 1988; 27:90–104.

Pargament KI, Koenig HG, Tarakeshwar N, Hahn J. Religious struggle as a predictor of mortality among medically ill elderly patients: A 2-year longitudinal study. Archives of Internal Medicine. 2001a; 161:1881–1885. [PubMed: 11493130]

Pargament KI, Tarakeshwar N, Ellison CG, Wulff KM. Religious coping among the religious: The relationships between religious coping and well-being in a national sample of Presbyterian clergy, elders, and members. Journal for the Scientific Study of Religion. 2001b; 40:497–515.

Patil VH, McPherson MQ, Friesner D. The use of exploratory factor analysis in public health: A note on parallel analysis as a factor retention criterion. American Journal of Health Promotion. 2010; 24:178–181. [PubMed: 20073383]

Peterman AH, Fitchett G, Brady M, Hernandez L, Cella D. Measuring spiritual well-being in people with cancer: The functional assessment of chronic illness therapy-spiritual well-being scale (FACIT-Sp). Annals of Behavioral Medicine. 2002; 24:49–58. [PubMed: 12008794]

Phillips RE, Pargament KI, Lynn QK, Crossley CD. Self-directing religious coping: A deistic God, abandoning God, or no God at all? Journal for the Scientific Study of Religion. 2004; 43:409–418.

Reed P. The Spiritual Perspective Scale. 1996 Unpublished instrument.

Schulz EK. Spirituality and disability: An analysis of select themes. Occupational Therapy in Health Care. 2004; 18:57–83.

Schulz E. The meaning of spirituality in the lives of individuals with disabilities. Disability and Rehabilitation. 2005; 27:1283–1295. [PubMed: 16298931]

Schulz, E. OT-quest assessment. In: Hemphill-Pearson, BJ., editor. Assessments in occupational therapy mental health: An integrative approach. 2nd ed. Thorofare, NJ: SLACK Incorporated; 2008. p. 264-289.

Schulz E, Holt CL, Caplan L, Blake V, Southward P, Buckner A, et al. Role of spirituality in cancer coping among African Americans: A qualitative examination. Journal of Cancer Survivorship. 2008; 2:104–115. [PubMed: 18648979]

Simon CE, Crowther M, Higgerson HK. The stage-specific role of spirituality among African American Christian women throughout the breast cancer experience. Cultural Diversity and Ethnic Minority Psychology. 2007; 13:26–34. [PubMed: 17227174]

Stellefson ML, Hanik BW, Chaney BH, Chaney JD. Factor retention in EFA: Strategies for health behavior researchers. American Journal of Health Behavior. 2009; 33:587–599. [PubMed: 19296749]

Tedeschi RG, Calhoun LG. The posttraumatic growth inventory: Measuring the positive legacy of trauma. Journal of Traumatic Stress. 1996; 9:1573–1598.

Thoresen, CE. Spirituality, health, and science: The coming revival?. In: Roth-Roemer, S.; Kurpius, SR., editors. The emerging role of counseling psychology in health care. New York: W. W. Norton; 1998. p. 409-431.

Wagner GB. Cancer recovery and the spirit. Journal of Religion and Health. 1999; 38:27–38.

Walton J, Sullivan N. Men of prayer: Spirituality of men with prostate cancer: A grounded theory study. Journal of Holistic Nursing. 2004; 22:133–151. [PubMed: 15154989]

Watson D, Clark LA, Tellegen A. Development and validation of brief measures of positive and negative affect: The PANAS scales. Journal of Personality and Social Psychology. 1988; 54(6): 1063–1070. [PubMed: 3397865]

Table 1

Participant demographic characteristics

Characteristic	Category	(*N* = 100)
Sex	Male	50
	Female	50
Age mean (SD)		58.54 (10.69)
Age median		59
Relationship status	Single	7
	Married	48
	Separated	6
	Divorced	28
	Widowed	11
Education	Grades 1–8	4
	Grades 9–11	5
	Grade 12 or GED	29
	1–3 years college	29
	4+ years college	32
Income	<10 k	10
	10–15 k	13
	15–20 k	14
	20–25 k	11
	25–35 k	15
	35–50 k	13
	50–75 k	9
	>75 k	12
Cancer type	Breast	32
	Prostate	23
	Lung	5
	Colorectal	19
	Other	21

Numbers may not sum to 100 due to missing data

Table 2

Descriptive characteristics of instruments

Instrument	Alpha α	Items	Possible range	Mean score (SD)
Connections to self	.86	7	7–28	24.87 (2.93)
Connections to others	.76	10	10–40	30.85 (3.48)
Connections to God	.80	8	8–32	29.57 (2.65)
Connections to world	.79	7	7–28	24.24 (2.85)

Table 3

Items comprising instruments and factor loadings, and item-total correlations

	1	2	3	*M* (SD)	*N*	Item-total correlation
Connections to self						
Through my experience with cancer, I gained a better understanding of myself	.57	–	–	3.61 (.49)	100	.44
Through my experience with cancer, I learned that it is ok to put myself first	.68	–	–	3.33 (.77)	98	.56
Through my experience with cancer, I learned to accept myself	.87	–	–	3.58 (.54)	99	.80
Through my experience with cancer, I learned to love myself more	.85	–	–	3.59 (.53)	100	.75
My experience with cancer has made me more honest with myself	.80	–	–	3.52 (.56)	100	.70
My experience with cancer has made me care more about myself than I did before	.81	–	–	3.64 (.52)	100	.71
As a result of my experience with cancer, I have become a better person	.65	–	–	3.54 (.52)	98	.53
Connections to others						
I made it through cancer with the help of my family	**.90**	−.22	−.18	3.78 (.46)	100	.33
I relied on my friends who were there for me during my cancer experience	.24	**.52**	.03	3.29 (.73)	100	.46
During my cancer experience, I made close relationships with other cancer patients	.14	**.57**	−.02	3.03 (.80)	100	.40
My church family was helpful to me during my cancer experience	.07	.14	**.76**	3.42 (.84)	100	.54
Love and support from others was helpful to me during my cancer experience	**.73**	−.03	.23	3.69 (.47)	100	.59
My experience with cancer has brought me closer to family or friends	**.75**	.27	−.04	3.57 (.54)	100	.66
My experience with cancer has given me meaningful relationships with medical providers	**.64**	.01	.06	3.45 (.59)	100	.43
As a result of my experience with cancer, I have become closer with my pastor/minister	−.09	−.14	**.97**	3.20 (.81)	99	.32
As a result of my experience with cancer, I have made friends that I would not have otherwise have made	−.12	**.87**	.02	3.13 (.75)	100	.45
During my cancer experience, I found out who my friends really are	−.17	**.78**	−.07	3.49 (.64)	100	.28
Connections to God						
As a result of my cancer experience, I became more thankful to God	−.17	**.73**	–	3.77 (.45)	100	.38
My cancer experience has brought me closer to God	.04	**.76**	–	3.70 (.54)	100	.57
My relationship with God has become more important to me as a result of my cancer experience	−.04	**.85**	–	3.68 (.57)	100	.57
From having cancer, I now seek God's presence more	.06	**.80**	–	3.57 (.57)	100	.60
I was never alone during the cancer experience because God is always with me	**.85**	.06	–	3.80 (.40)	100	.63
I feel that God is leading and guiding me through the cancer experience	**.83**	.13	–	3.75 (.44)	99	.69
Having a relationship with God helped me to cope with cancer	**.87**	.05	–	3.80 (.40)	100	.64
Having a strong relationship with God has decreased my stress during the cancer experience	**.69**	−.29	–	3.52 (.64)	100	.23

	1	2	3	*M* (SD)	*N*	Item-total correlation
Connections to world						
My experience with cancer has made me want to give back by helping others	**.86**	−.20	–	3.67 (.59)	100	.48
As a result of my experience with cancer, I have increased my volunteer activities	**.70**	.06	–	3.05 (.76)	100	.54
As a result of my experience with cancer, I have tried to have a positive effect on other people	**.56**	.25	–	3.65 (.50)	100	.56
As a result of my cancer experience, I now try to encourage others with cancer	−.06	**.87**	–	3.58 (.59)	100	.47
As a result of my cancer experience, I now find myself donating to charity	**.76**	−.04	–	3.20 (.70)	100	.52
My experience with cancer has helped me to try to give back to society	**.42**	**.40**	–	3.43 (.59)	100	.55
My experience with cancer has encouraged me to help someone else with cancer	−.06	**.91**	–	3.66 (.54)	100	.51

Factor loadings are for one instrument at a time

'–' factor not applicable

Table 4

Correlation matrix for all study instruments

Construct	CS OA	CO OA	CO F1	CO F2	CO F3	CG OA	CG F1	CG F2	CW OA	CW F1	CW F2	FACIT-SP	PANAS negative
Connections to self—overall	–												
Connections to others—overall	.44**	–											
Connections to others—factor 1	.48**	.78**	–										
Connections to others—factor 2	.31**	.84**	.39**	–									
Connections to others—factor 3	.26**	.55**	.42**	.25*	–								
Connections to God—overall	.37**	.34**	.22*	.34**	.29**	–							
Connections to God—factor 1	.40**	.39**	.25*	.39**	.26**	.86**	–						
Connections to God—factor 2	.21*	.16	.11	.16	.21*	.82**	.41**	–					
Connections to world—overall	.50**	.57**	.47**	.52**	.31**	.41**	.38**	.30**	–				
Connections to world—factor 1	.48**	.55**	.43**	.52**	.24*	.35**	.34**	.24*	.95**	–			
Connections to world—factor 2	.36**	.40**	.37**	.32**	.33**	.38**	.33**	.31**	.72**	.47**	–		
FACIT-SP	.14	.22*	.22*	.14	.30**	.40**	.28**	.40**	.30**	.28**	.24*	–	
PANAS negative	.07	.13	.10	.14	−.03	−.08	−.01	−.14	.12	.10	.13	−.22*	–

CS connections to self, *CO* connections to others, *CG* connections to God, *CW* connections to world, *OA* overall

** $p < .01$;

* $p < .05$