Published in final edited form as:
J Relig Spiritual Aging. 2014 January 1; 26(4): 357–369. doi:10.1080/15528030.2014.928922.

Religiosity After a Diagnosis of Cancer Among Older Adults

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Abstract

Aspects of religiosity are important to health and quality of life of cancer patients. This analysis examined changes in religiosity among community-dwelling cancer survivors. Previously diagnosed and newly diagnosed cancer survivors age 65+ were interviewed at baseline and four years later to understand how components of religiosity may change. Religiosity was assessed as organizational, non-organizational, and intrinsic using the Duke Religiosity Scale. At four years, 45 persons had a new diagnosis of non-skin cancer in addition to the 94 diagnosed at baseline. In comparison to persons without a cancer diagnosis and participants with a baseline diagnosis, newly diagnosed participants were more likely to decrease church attendance. Although not statistically significant, a larger proportion of recently diagnosed persons increased non-organizational religiosity behaviors and intrinsic religiosity compared to those with cancer at baseline and those without cancer. African Americans were more likely than Caucasians to show increased non-organizational religiosity. Caucasians with a cancer diagnosis showed increased intrinsic religiosity, perhaps because of a ceiling effect among African Americans. Although all groups showed declines and increases in the measures, baseline religiosity was the strongest predictor of religiosity at 48 months, indicating stability in religiosity over time, even in the context of a cancer diagnosis.

Keywords

aging/ageing; religion; prayer; church; spirituality

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The incidence rates of most non-skin cancers increase as people age (SEER Cancer Statistics Review 1975-2009) and cancer is the second leading cause of death in people 65 years and over. Spirituality, religiosity, and faith, components of the spiritual context of individual lives, are effective coping mechanisms and important to the health, quality of life, and survivorship among people with cancer (Schulz, et al. 2008 and Holt, et al. 2009; Mytko & Knight 1999 and Laubmeier, et al. 2004). Among terminal cancer patients, those reporting higher levels of faith had higher quality of life (Swensen 1993).

Changes in religiosity associated with health

There are a number of gaps in our understanding of the impact of health on changes in religiosity and spirituality. Religiosity has been conceptualized as being multi-dimensional, including specific beliefs as well as behaviors, both of which have been measured in numerous ways by researchers (Hackney and Sanders, 2003). Spirituality is sometimes defined as being a separate construct from religiosity, but others conceptualize spirituality as intrinsic religiosity (Koenig, et al. 1997; Koenig and Bussing 2010)). This lack of commonality in terminology makes comparison across studies problematic.

While sparse there has been some work done on the changes in religiosity and religious beliefs of people who experienced a traumatic event. One study looked at changes in religious beliefs and predictors of such changes in a community sample exposed to a natural disaster (Hussain, et al. 2011). A population of 1,180 adult Norwegian tourists who experienced the 2004 tsunami were surveyed by a postal questionnaire two years later. A total of 8% reported strengthening and 5% reported weakening of their religious beliefs. Strengthening of religious beliefs was associated with pre-tsunami mental health problems (OR: 1.82, 95% CI: 1.12-2.95) and posttraumatic stress (OR: 1.62, 95% CI: 1.22-2.16), while weakening was also associated with posttraumatic stress (OR: 1.72, 95% CI: 1.23-2.41). Those who had the greatest disaster exposure were more likely to report changes in religious beliefs.

Results from an analysis of the influence of 9/11 on the religious and spiritual lives of American young adults (Uecker 2008) suggested that the attacks exerted only modest and short-lived effects on various aspects of young adults' religiosity and spirituality, with the effects being variable. Relationships among trauma, posttraumatic stress disorder (PTSD), and religious beliefs were examined in 120 individuals from community and clinical samples (Falsetti, et al. 2003) and showed that the PTSD group was more likely to report changes in religious beliefs following the first/only traumatic event, generally becoming less religious. PTSD status was not related to change in religious beliefs following the most recent incident; intrinsic religiosity was related to multiple events but not PTSD.

To understand the relationship of religion and aging in a study designed to examine patterns of change and stability in religiosity over the life course (Ingersoll-Dayton, et al. 2002), content analysis of interviews of 129 adults 65 years and older was used to identify: 1) dimensions of religiosity that exhibit change; 2) patterns of religious trajectories; and 3) social forces that promote changes in religiosity. These analyses revealed four distinct

patterns: stable, increasing, decreasing, and curvilinear trajectories. Adverse life experiences were involved with both increasing and decreasing religiosity.

Cancer diagnoses and religiosity

Relatively few studies have examined the impact of a cancer diagnosis on religious and spiritual practices and beliefs (Sherman and Simonton 2001). Although a well-established positive association has been demonstrated between religiosity and cancer coping, there has been little work done on changes in religiosity, especially among cancer survivors. Feher and Maly (1999) did a structured interview with open-ended questions on a convenience sample of 33 women 65 years of age and older recruited within six months of their breast cancer diagnosis. One half of the respondents reported that their religious and spiritual beliefs had strengthened as a result of their cancer diagnosis, while the remaining 50% said it had remained the same. Roberts et al. (1997) studied 108 women with various stages of gynecologic cancers and 39 women with benign gynecologic disease. Seventy-six percent indicated that religion had a serious place in their lives, with 49% becoming more religious since their cancer diagnosis, whereas no one became less religious. However, women with benign disease reported an almost equal increase to that of the cancer group with 46% becoming more religious. Yates et al. (1981), in a study of 71 advanced cancer patients, reported that although cancer patients felt faith was important in their lives, there were no dramatic changes in religious beliefs as their condition deteriorated.

Due to the lack of studies in the UK and the contradictory results of US studies, a study was done to examine the impact of a breast cancer diagnosis on patients' religious and spiritual beliefs and practices in the UK (Thune-Boyle, et al. 2011). The study compared the religious and spiritual beliefs and practices of 202 newly diagnosed breast cancer patients with those of a control group of 110 healthy women, and also examined patients' perceived change in religious and spiritual beliefs and practices at the time of surgery with those in the year prior to surgery. Levels of religiosity and spirituality, strength of faith, belief in G-d, private and public practices were assessed. Patient's perceived their belief in G-d, strength of faith and private practices to have significantly increased shortly after surgery compared with the year preceding surgery. However, no significant differences in religious and spiritual beliefs and practices were found between the cancer group and the healthy group at the time of surgery. Change scores demonstrated both reduced and increased religious and spiritual beliefs and practices. The authors conjectured that different methodologies appear to produce different results and may explain contradictions in past US studies.

As noted above, it has been suggested that traumatic events or serious illness such as cancer can result in increased religiosity but findings are inconsistent. Another consideration is the impact of race/ethnicity on religiosity and change in religiosity associated with a cancer diagnosis. Religiosity and health are closely linked in African American culture, with explanations of illness and healing being associated with G-d and faith (Stroman 2000). Because African Americans are at increased risk of developing most cancers, having a disproportionate burden of cancer incidence (SEER Cancer Statistics Review 1975-2009) as well as usually presenting later in the course of disease than Whites (American Cancer

Society, 2012), it is expected that religiosity would become especially meaningful with age and to African Americans' ability to cope with illness (Schulz, et al. 2008).

A Longitudinal analysis of cancer diagnoses and religiosity in the UAB Study of Aging

There are methodological challenges in this area of study largely due to identifying an optimal dataset to address the research question of whether a cancer diagnosis results in increases or decreases in religiosity. Data from the longitudinal University of Alabama (UAB) Study of Aging provide a unique opportunity to examine change in religiosity among persons who were previously diagnosed and persons who were diagnosed between two waves of data collection. The dataset also provides the opportunity to study African American and Caucasian older adults in community-based settings, as opposed to clinics. Additionally, the dataset has measures of three aspects of religiosity, adding to the existing literature. Our initial hypothesis was that a cancer diagnosis would lead to increased religiosity in the majority of both African Americans and Caucasians in the study sample.

Methods

The UAB Study of Aging, a study of mobility among African American and White community-dwelling older adults, has been described in detail previously (Allman, et al. 2006). Briefly, a baseline in-home interview (completed between December 1999 and February 2001) was followed by a similar in-home interview in 2004, providing data over four years. The initial sample of 1000 community-dwelling Medicare beneficiaries aged 65 years and older was balanced in terms of sex, race (African American and Caucasian), and rural/urban residence. This analysis includes data from participants who completed the in-home assessment in 2004. The study protocol was approved by the Institutional Review Board at the University of Alabama at Birmingham.

Measures

Three components of religiosity (baseline and 48 month interview) were assessed based on the Duke Religiosity Scale: Organizational, Non-organizational, and Intrinsic (Koenig, et al. 1997; Koenig and Bussing 2010). Organizational religiosity was based on church attendance and was assessed by the question “How often do you attend church or other religious meetings?” The response categories were “Never, Once a year or less, A few times a year, A few times a month, Once a week, and More than once a week.” Non-organizational was based on private behaviors like prayer, and was assessed by the question “How often do you spend time in private religious activities, such as prayer, meditation, or Bible study?” The response categories were “Rarely or never, A few times a month, Once a week, Two or more times a week, Daily, and More than once a day.” Intrinsic religiosity was based on agreement level with three attitudinal statements, one dealing with experiencing presence of the Divine, one with religious beliefs lying behind one's approach to life, and the other with carrying religion into all other dealings in life. Participants were asked to categorize their level of agreement with the following statements: “In my life, I experience the presence of the Divine (i.e., G-d),” “My religious beliefs are what really lie behind my whole approach to life,” and “I try hard to carry my religion over into all other dealings in life.” The response categories were “1) Definitely not true, 2) Tends not to be true, 3) Unsure, 4)

Tends to be true, and 5) Definitely true of me." For this analysis, religiosity measures were recoded so that lower scores represented lower religiosity. Change in religiosity was calculated by subtracting 48 month scores from baseline. Standardized scores were created across the three scales for comparison (range 0-60).

Medical diagnoses (baseline and 48 month interview), including cancer, were considered verified if the patient was taking a medication for the condition, if a physician questionnaire was returned indicating that the participant had the condition, or if the condition was listed on a hospital discharge summary during three years prior to enrollment in the study. A non-skin cancer diagnosis was categorized as present at the baseline interview, new at the 4 year interview, or not present. A summary count of diseases other than cancer that are part of the Charlson comorbidity index (Charlson, et al. 1986) (congestive heart failure, previous heart attack, valvular heart disease, peripheral artery disease, hypertension, diabetes mellitus, respiratory problems (asthma/COPD), kidney failure, liver disease, cancer other than skin, neurological disease, and gastrointestinal disease) was created.

Covariates

Demographic factors were self-reported and included age, race, and marital status. Locale was defined as urban or rural based on county population in 2000 (Alabama Rural Health Association, 1998). Education was categorized as 1 = completed 6th grade or less, 2 = completed 7th through 11th grade, 3 = completed high school or GED, and 4 = any higher education.

Total combined family income before taxes (48 month interview) was reported in the following nine categories: 0 = less than $5,000; 1 = $5,000-$7,999; 2 = $8,000-$11,999; 3 = $12,000-15,999; 4 = $16,000-$19,999; 5 = $20,000-29,999; 6 = $30,000-$39,000; 7 = $40,000-$49,000; and 8 = greater than $50,000. The following question also was asked about subjects' perceived income: "All things considered, would you say your income is 1) not enough to make ends meet, 2) gives you just enough to get by on, 3) keeps you comfortable, but permits no luxuries, or 4) allows you to do more or less what you want." For persons who did not report income (165 subjects), responses indicating perceived income were used to calculate income categories based on the correspondence of income categories and perceived income among persons with answers to both questions.

Transportation difficulty (48 month interview) was defined by a positive response to either of the following questions: "Over the past four weeks, have you had any difficulty getting transportation to where you want to go?", and "Do you limit your activities because you don't have transportation?"

Social support (48 month interview) was measured using the Lubben social support scale (Lubben, 1988) which measures the risk of social isolation (higher categories indicate lower risk of isolation). The measure incorporates the individual's living arrangements, size of social networks, and reciprocal social supports, as well as frequency and emotional closeness of social contact family and friends.

Activities of Daily Living (48 month interview) were assessed by a count of Basic and Instrumental Activities of Daily Living (BADL and IADL) (Lawton and Brody, 1969) for which difficulty was reported. Basic activities included dressing, bathing, transferring from bed to chair, eating, toileting, walking, and getting outside (range 0-7). Instrumental activities included using the telephone, managing money, preparing meals, doing light housework, shopping, and doing heavy housework (range 0-6).

The presence of depressive symptoms (48 month interview) was assessed using the 15-item version of the Geriatric Depression Scale (Yesavage, et al. 1982-83). The assessment was designed specifically to screen for depression in the elderly, with higher scores indicating greater depressive symptomatology. The Mini-Mental State Exam (MMSE) (48 month interview) was used to evaluate cognitive function. The MMSE includes items related to orientation, registration and recall, attention, and visuospatial construction; scores range from 0-30 (Folstein et al., 1975).

Analysis

Bivariate analyses (correlation and cross-tabulations) were used to examine differences in the three cancer categories (cancer at baseline, new cancer at 4 years, no cancer) for all factors under consideration. Multivariable linear regression evaluated the independent association of cancer status on religiosity measures, controlling for baseline religiosity and other factors.

Results

Religiosity measures reflected a high degree of religiosity for all UAB Study of Aging participants. Table 1 shows descriptive statistics by cancer category. Survivors at four years who had no non-skin cancer diagnoses (the no-cancer group) were more likely to be female, in comparison to those with a cancer diagnosis prior to baseline or recent) who were more likely to be male. The only religiosity measure that differed between the groups was organizational, with recently diagnosed participants reporting lower church attendance. Although not significant, fewer persons with a cancer diagnosis were at risk for social isolation, 13% in comparison to 18% without cancer.

As shown in Table 2, measures of religiosity were dynamic with 4-year declines and increases for all measures and among all groups defined by cancer diagnosis status. Although any change was roughly similar for non-organizational religiosity with all groups showing increased religiosity, increases were highest (17.8%) and declines lowest (6.7%) among those with recently diagnosed cancer.

Comparing persons with cancer prior to baseline and those with a more recent cancer diagnosis, the association with attendance at church services was significantly lower for the more recently diagnosed (p=.005; data not shown). However, the recently diagnosed had lower attendance prior to the cancer diagnosis (see Table 2). Although nearly two times as many recently diagnosed participants experienced a decline in service attendance in contrast to increased attendance (31.1% vs. 15.6%), this was not statistically significant perhaps due to a lack of power.

The correlations of baseline and 48 month religiosity measures were significant ($p<.001$) for all measures, although there was variation in the degree of correlation (Table 3). Table 4 focuses on change within individuals, showing the average differences for each of the standardized religiosity measures. Although the greatest decrease (-2.13) was organizational religiosity among the recently diagnosed, this was not significant whereas a slightly smaller decrease among those without cancer (-1.44) did reach statistical significance ($p=.03$). With the range of individual change over all measures less than 1%, it can be seen that religiosity remained remarkably stable, regardless of the cancer diagnoses.

Linear regression models (not shown) indicated that baseline religiosity was a significant predictor of follow-up religiosity for all measures ($p<.001$), and that cancer diagnosis status was not a significant predictor of religiosity at 48 months. Race was not significant in any model.

There were however, differences in patterns of declines and increases between African Americans and Caucasians in this sample. However, because there was a ceiling effect (mean of 11.7 of a possible score of 12) for the measure of intrinsic religiosity for African Americans, increased religiosity was significantly higher for Caucasians in comparison to African Americans for the group without cancer (25.5% vs. 12.9%) and those with a longer time since diagnosis (28.6% vs. 8.9%). Among persons with an older (>4 years) or more recent (≤ 4 years) cancer diagnosis, sample size limited testing statistical significance. However, in contrast to Caucasians, African Americans were more likely to show increased non-organizational behaviors both for the longer time diagnosis group (8.2% vs. 20.0%) and the more recently diagnosed (9.5% vs 25%).

Discussion

Cancer patients may use religious beliefs to cope with the diagnosis and consequences of living with cancer (Bowie, et al. 2001; Gall 2000; Jenkins & Pargament, 1995). Religion may buffer stress for those coping with illness and, may provide an interpretive framework, aiding in coping; religious affiliation may be a source of social support (Siegel, et al. 2001). Many cancer patients draw meaning from their suffering (Kappeli 2000) and find prayer to be helpful, despite religious conflicts arising when prayers are considered unanswered (Taylor, et al. 1999).

Our previous study using the UAB Study of Aging suggested that better health outcomes (functional ability and depression) were associated with increased religiosity (Caplan, et al. 2013). Baseline organizational religiosity predicted baseline depression, which affected four-year depression, but baseline religiosity did not affect four-year depression directly. This demonstrated the sustained salience of religiosity over time. The lack of a baseline association of non-organizational religiosity with any measure of function and the association of increased ADL difficulty at follow-up was perhaps an indication that personal patterns of prayer and meditation remain stable over time, even in the context of a diagnosis of cancer. In the current study, we were afforded the opportunity to study the changes in religiosity among a sample of highly religious community-dwelling older adults. We hypothesized that a cancer diagnosis would lead to increased religiosity in the majority of

the study population. We found a suggestion of this as the non-organizational religiosity increased slightly more in the more recently diagnosed compared to the group that had cancer diagnosed four years earlier and those without a cancer diagnosis. Although these differences were not statistically significant, the recently diagnosed were also less likely to show declines in non-organizational religiosity than the other two groups. The decreased risk of social isolation among persons with a cancer diagnosis suggests that a cancer diagnosis may be the impetus for increased social support.

This study is unique because of the inclusion of approximately 50% African Americans, and the availability of religiosity measures before a diagnosis of cancer for a sample subset. Although it was a strength that the sample was drawn from the community, as opposed to recruiting cancer survivors from clinics, this design limited the ability to test for statistical differences, particularly in relation to the small number of recently diagnosed participants who were interviewed at 48 months. Additionally, the finding that there were no significant differences could be the lack of specifics regarding the cancer diagnoses, particularly the stage at diagnosis. The groups with cancer represented a broad range of cancer types with different treatment options and differing prognoses.

Another potential limitation of this analysis is that the sample includes community-dwelling, relatively healthy older adults, based on the thought that those who were not feeling well might not have participated. This sample thus follows persons who may have “come to terms” with their cancer diagnosis. However, this analysis is unique in that we had measures on a subset of individuals before they had a cancer diagnosis.

This secondary data analysis supports previous literature suggesting that religiosity is relatively stable over time, even examining three aspects of religiosity. Consistent with other findings, the analyses support greater religiosity among African Americans; the numbers who were more likely to engage in private religiosity also suggest that religiosity may have greater coping salience among African Americans.

Acknowledgments

This research was funded in part by NIA grant numbers R01 AG15062 and 3P30AG031054-0651. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute on Aging or the National Institutes of Health.

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Table 1
Sample Characteristics by Cancer Status

Factor (4 year)	Cancer Status			p-value
	No Cancer N=485	Diagnosis >4 years N=94	Diagnoses ≤ 4 years N=45	
Socio-demographic				
Mean Age (SD)	73.9 (6.0)	74.4 (5.6)	72.6 (5.9)	.265
Male	44.1%	55.3%	57.8%	.043
African American	48.2%	47.9%	53.3%	.800
Income Category	3.9 (2.4)	4.2 (2.4)	4.3 (2.4)	.385
Education Category	2.6 (1.1)	2.8 (1.2)	2.9 (1.1)	.181
Transportation Difficulty	14.0%	18.1%	17.8%	.511
Isolate or High Risk of Social Isolation	17.9%	12.8%	13.3%	.707
Health and Function				
Comorbidity	2.6 (1.8)	2.7 (1.6)	2.5 (1.8)	.832
ADL difficulty (1-5) (mean)	.56 (1.2)	.53 (0.5)	.60 (1.3)	.946
IADL difficulty (1-6) (Mean)	1.2 (1.7)	1.2 (1.7)	1.1 (1.8)	.837
Life-space	60.5 (23.40	63.3 (24.2)	67.5 (25.6)	.112
Cognitive/Emotional				
Mean MMSE (0-30)	25.1 (4.5)	25.3 (4.5)	25.1 (3.9)	.926
Mean GDS (0-16)	2.1 (2.0)	2.1 (2.3)	2.0 (2.4)	.857
Mean Anxiety (5-25)*	19.1 (4.2)	19.3 (4.2)	19.0 (4.9)	.927
Religiosity				
Organizational (0-5)	3.42 (1.69)	3.78 (1.45)	2.95 (1.80)	.019
Non-organizational (0-3)	2.65 (.89)	2.73 (.75)	2.67 (.83)	.696
Intrinsic (0-12)	11.20 (2.0)	11.51 (1.43)	10.93 (2.09)	.197

*Higher Scores = less anxiety

Table 2

Baseline and Follow-up Religiosity by Cancer Status*

	Cancer Status			
	No Cancer N=485	**Diagnosis >4 years N=94**	**Diagnoses ≤ 4 years N=45**	**p-value**
Organizational				
Baseline Mean	42.61(19.5)	44.94 (17.77)	37.3 (20.87)	.113
4-Year Mean	41.09 (20.2)	45.45 (17.4)	35.47 (21.6)	.019
% Decline	24.6%	23.4%	31.1%	.588
% Increase	20.3%	25.5%	15.6%	.347
Non-Organizational				
Baseline Mean	51.65 (.17.6)	54.04 (14.9)	49.78 (.99)	.336
4-Year Mean	53.02 (17.83)	54.68 (15.0)	53.33 (.16.5)	.696
% Decline	8.7%	9.6%	6.7%	.851
% Increase	14.9%	13.8%	17.8%	.829
Intrinsic				
Baseline Mean	55.71 (9.9)	56.91 (7.3)	54.44 (12.6)	.345
4-Year Mean	56.01 (9.8)	57.55 (7.1)	54.67 (10.47)	.197
% Decline	15.9%	11.7%	17.8%	.529
% Increase	14.9%	13.8%	17.8%	.993

*Scores are standardized for comparison and range 0-60; higher scores are greater religiosity

Table 3

Correlations of Baseline to Follow-up Religiosity Score Differences by Cancer Status*

	Cancer Status		
	No Cancer	**Diagnosis >4 years**	**Diagnoses ≤ 4 years**
Organizational	.638	.565	.707
Non-Organizational	.486	.357	.676
Intrinsic	.647	.483	.775

* p<.001 for all correlations

Table 4

Paired Comparisons: Baseline to Follow-up Religiosity Score Differences by Cancer Status*

	Cancer Status					
	No Cancer	**p-value**	**Diagnosis >4 years**	**p-value**	**Diagnoses ≤ 4 years**	**p-value**
Organizational	-1.44	.030	0.51	.764	-2.13	.383
Non-Organizational	1.28	.126	0.64	.716	3.55	.118
Intrinsic	0.29	.484	0.64	.843	0.22	.853

*Based on standardized for comparison and range 0-60, higher scores are greater religiosity