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Religious Coping in Cancer: A quantitative analysis of expressive writing samples from patients with renal cell carcinoma

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Abstract

Context.—Past religiosity/spirituality (R/S) research has mainly relied on self-report instruments which may result in self-presentation and defensive biases.

Objectives.—To address these limitations, we reviewed the writing samples that were generated as part of an expressive writing trial, coded the samples for R/S content, and examined cross-sectional and prospective associations between R/S content and symptom and psychosocial outcomes.

Methods.—Participants diagnosed with renal cell carcinoma who were randomized to the expressive writing arm completed a standard writing protocol. Prior to randomization, they completed validated measures of R/S, depressive symptoms, social support, fatigue, and sleep disturbances and 1, 4 and 10 months after completing the intervention. Writing samples were coded for positive and negative religious coping (RC), and personal (e.g., private prayer) and collective (e.g., church attendance) religious engagement (RE).

Results.—Of the 138 patients, 117 provided at least one writing sample, and 89% of participants made at least one R/S reference with 70% including at least one positive RC statement and 45.3% revealed personal and 42.3% collective religious engagement. Negative RC was rare (8%). Although positive RC and RE were significantly associated with the R/S Index ($P < .01$), negative RC was not. In prospective analyses, RE was associated with reduced cancer-related symptoms over time ($P = .04$) and negative RC was associated with increased psychological distress over time ($P = .004$).

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Conclusion.—Behavioral coding of expressive writing samples supported the literature suggesting that positive RC is common among cancer patients. Although negative RC may be relatively rare, it may be associated with psychological distress.

Keywords

Religion; Spirituality; Cancer; Expressive writing; Religious coping; God; Quality of life

INTRODUCTION

Religious beliefs and practices may be important resources for coping with a serious illness. (1, 2) In the United States, over 70% of the population endorses having a religious belief and 50% indicate that religion is a very important aspect of their lives. (3) Levels of religion (e.g., religious affiliation, service attendance) and spirituality (e.g., connection to a source larger than oneself, feelings of transcendence) are especially high in people dealing with cancer who are experiencing one of the most stressful events of their life. (4)

According to meta analyses, R/S are associated with physical and mental health in cancer patients. (5, 6) Studies of R/S have repeatedly found that higher self-reported levels of R/S are associated with better quality of life (QOL) and reduced anxiety, depression, and hopelessness among cancer patients. (7) In another meta-analysis examining the correlation between R/S dimensions and mental health in cancer, modest but positive correlations were found between R/S coping and mental health. (6) It was found that R/S overall was positively associated with mental health outcomes. However, some studies have not found an association between R/S and QOL (8, 9) or have found negative associations between R/S coping and mental health (10).

These inconsistencies may primarily be related to measurement heterogeneity and differences in operationalization of R/S across studies. For instance, religious coping is often defined as the use of cognitive and behavioral techniques that arise out of one's religion and spirituality, in the face of stressful events. (11) However, rather than considering R/S coping as a unidimensional construct, recent R/S literature highlights the importance to distinguish between positive and negative religious coping. (11, 12) Positive religious coping is rooted in a secure and trusting connection with God and includes strategies such as seeking religious support and making adaptive religious reappraisals (e.g., God loves me unconditionally). In contrast, negative religious coping reflects an ambivalent relationship with God and involves religious discontentment (e.g., doubting one's faith) and making punitive religious reappraisals (e.g., God is punishing me).

This distinction is important because positive and negative religious coping may have a differential effect on physical, behavioral, and mental health aspects of QOL in cancer patients. For example, Sherman et al. showed that negative religious coping was associated with increased depression and worse emotional and physical well-being. (13) In an exploratory study, spiritual pain was associated with lower QOL in advanced cancer patients. (14) In addition, a longitudinal study on R/S coping found positive R/S coping was predictive of better health, while negative R/S coping was predictive of worse health after

two years. (15) Nevertheless, few studies in the cancer setting assess both dimensions of R/S.

Moreover, measurement issues may also arise when R/S instruments include items that assess religious affiliation and church attendance and thus, confound social support processes with specific R/S behaviors. The typical sole reliance on self-report instruments for R/S may also result in self-presentation and defensive biases masking or inflating the associations between R/S and QOL outcomes. Similarly, because the endorsement of religious coping can be extremely high in patients with cancer, there is the potential for a ceiling effect with little variance, obscuring the potential associations between R/S and outcomes. The overreliance on self-report assessments may also inflate the associations between R/S and QOL outcomes due to common method variance (i.e., the shared variance that is attributable to the measurement method rather than the construct being measured). (16) Lastly, most studies involve cross-sectional assessments and lack prospective designs so that no inference regarding the direction of the association can be made (i.e., individuals with poor health may be more likely to use R/S coping but no cause and effect relationship can be observed). Thus, longitudinal studies that assess both positive and negative R/S coping with a multi-method approach are needed to better understand the complex nature of R/S in coping with cancer. (17)

To address these limitations in the literature, we examined R/S as assessed from a validated questionnaire as well as *the spontaneous sharing of religious content* from expressive writing (EW) samples from a large randomized control trial (RCT) in patients with renal cell carcinoma with both cross-sectional and prospective analyses. (18) The primary purpose of these secondary analyses was to identify the frequencies of spontaneously written religious content in participants' emotional writing samples and the extent to which the religious content in their writings was associated with a validated self-report R/S scale and cancer-related symptoms and psychosocial outcomes. We hypothesized that the religious content in the writing samples would be associated with a self-reported assessment of R/S. We also hypothesized that R/S as assessed by both self-report and the religious content in the writing samples would be prospectively associated with cancer-related symptoms and psychosocial measures across a 10-months follow-up period.

METHODS

Participants

Patients were eligible to participate in the parent RCT if they: 1) were diagnosed with stage I-IV renal cell carcinoma; 2) had a Zubrod performance status of 2 and no serious intercurrent medical illness requiring hospitalization; 3) were at least 18 years old; and 4) were able to read, write, and speak English. Patients who were unable to provide consent, were on immunosuppressive drugs, had a history of primary or secondary immunodeficiency, and/or participated in psychotherapy (self-identified) were excluded from the study.

Procedures

The current data are part of a large RCT targeting QOL outcomes in patients with renal cell carcinoma (RCC), and trial procedures have been described in detail elsewhere. (19,20) Briefly, all participants completed paper-pencil questionnaires at baseline (T1) and were then randomly assigned to either the Expressive Writing (EW) or Neutral Writing (NW) groups. Participants in both groups completed three additional assessments 1 (T2), 4 (T3), and 10 months (T4) after completing the intervention. Participants received a \$20 gift card for each assessment. Participants provided written informed consent prior to all data collection, and all procedures were approved by the Institutional Review Board, including the evaluations of the writing samples. For the purpose of the current study, we only report on participants who were randomized to the EW group.

Emotional Writing Samples and Religious Content Coding

As part of the parent RCT, participants completed an emotional writing intervention following the general writing procedures as originally outlined by Pennebaker and Beall (19) and modified based on our pilot work. (20, 21) Over the course of 10 days, on four separate occasions, participants in the EW group were asked to write about their deepest emotions and thoughts concerning their cancer experience (e.g., how the diagnosis and treatment interferes with their lives; treatment-related decision making; fears about the future). Writing prompts did not include any instructions related to religion or spirituality. All content of the writings was spontaneously volunteered by the patients. All writing samples were returned to the research team via pre-paid envelopes. A detailed description of writing procedures has been previously published. (18, 22) For the current study, we used a multi-step coding process to examine the religious content in participants' writing samples. First, we used the Language Inquiry Word Count (LIWC)(23) software to identify samples that may contain religious language. Two independent coders verified that samples with score of greater than 0 on the LIWC "relig" variable (which recognizes 54 words that are labeled as "religious") were in fact religious in nature as opposed to common expressions (e.g., "Good God!"). Then, we developed a behavioral coding scheme for positive and negative religious coping based on Exline's theoretical framework that has been adopted in current R/S conceptualizations. (24, 25) In general, language referring to reports of increased faith, statements about religion as a source of help or strength, positive references about God, or positive afterlife references, and meaning making were coded as *positive religious coping (RC)*. In contrast, statements about how religion made things worse, negative references about God, evidence of decreased faith, or negative responses from a religious community were coded as *negative religious coping (RC)*. We also coded writing samples based on participants' reports of their religious engagement. Religious practices such as personal prayer, worship time, meditation, and scripture reading were coded as *private religious engagement (RE)*; whereas religious activities including going to church, corporate worship and prayer, bible studies, prayer partners or praying for someone else were coded as *collective RE*. Two coders rated all samples and high interrater reliability was reached (kappa = .83-.86). All incidents of discrepancies were discussed with an additional reviewer (K.M.) until rater agreement was achieved. Each independent statement was counted as one behavior, aggregated across writing samples, and treated as a continuous variable. We then

created a mean score for each code by dividing the number of behaviors (i.e., statements) by the number of writing samples the participant had completed.

Self-Report Measures

Demographic Factors.—Relevant demographic items including religious affiliation were included in the baseline questionnaires.

The *Ironson-Woods Spirituality/Religiousness (SR) Index* (short form) was administered only at baseline (T1) to measure R/S across the four domains: 1) sense of peace (SOP), 2) faith in God (FIG), 3) religious behavior (RB), and 4) compassionate view of others (CV). (26) A R/S total score is also calculated that could range from 25 to 125 (Cronbach's alpha = 0.93).

Cancer-related symptoms were assessed with the MD Anderson Symptom Inventory (MDASI) (27). The MDASI consists of 13 core symptoms that are common across all cancer diagnoses and treatments. The symptom items include pain, fatigue, nausea, disturbed sleep, distress/feeling upset, shortness of breath, difficulty remembering, lack of appetite, drowsiness, dry mouth, sadness, vomiting, and numbness /tingling. Patients rate symptom severity of each of these 13 items and the extent to which their symptom burden interferes with daily activities (6 items) on a 0 to 10 scale. Higher scores denote greater severity and interference and the mean total score (0-10) is reported here (Cronbach's alpha = 0.97).

Psychological distress was measured with the 53-item Brief Symptom Inventory (BSI) (28) assessing psychological functioning over the past week across nine symptom dimensions. For simplicity the global severity index (GSI) raw score is reported here (Cronbach's alpha = 0.94).

Fatigue was measured with the Brief Fatigue Inventory (BFI) (29), a nine-item questionnaire asking participants to rate the severity of their fatigue and how much it interfered with their lives on a scale of 0-10, with 10 being the worst. Higher scores represent worse fatigue and the mean total score is reported here (Cronbach's alpha = 0.82).

Sleep disturbances.—The Pittsburgh Sleep Quality Index (PSQI), an 18-item questionnaire including seven subscales and a total score used to assess sleeping problems over the past month (30). Higher scores represent greater problems with sleep with total scores that could range from 0 to 21 and the total score is presented (Cronbach's alpha = 0.81).

Social Support was assessed with the Medical Outcomes Study Social Support Survey (MOS-SSS), a 20-item social support questionnaire developed for the chronically ill (31). Participants rated their perceived availability of emotional/informational support, tangible support, positive interactions, and affectional support. The total score is presented here with scores that could range from 0-26 and higher scores denote more social support (Cronbach's alpha = 0.95).

Data Analyses

We first performed descriptive analyses (e.g., frequencies, means, correlations, etc.) to characterize the participants and then of all religious content variables and self-reported baseline measures. To test the study hypotheses regarding prospective associations between the self-reported R/S and the religious content in the writing samples with symptom and psychosocial measures, we performed multilevel modeling (MLM) analyses using Proc MIXED (SAS, 9.4 version) accounting for the nested data structure of the repeated measures. We ran separate models for each of the R/S variables (using the total score of the self-reported measure). We specified a random intercept and an unstructured covariance matrix, treated assessment time as a categorical covariate, and recorded 95% confidence intervals (CI) for the predictor variable (i.e., religious content). P values <0.05 were considered significant. We also included baseline level of the outcome as a covariate in all MLM analyses. Because age, sex, and stage at diagnosis are important prognostic factors in RCC, (32–35) we also included these variables as *a priori* covariates. Unlike the general linear model using listwise deletion, PROC MIXED uses a likelihood-based estimation method for missing data so that attrition and missing data are less of a concern.(36)

RESULTS

Baseline Sample Characteristics

As detailed in the original report, we approached 761 eligible patients, 355 consented to participate, and 287 completed baseline measures. (18) Of the 138 participants assigned to the EW group, 117 initiated the intervention, and 87 participants completed the T2; 84 the T3; and 72 the T4 follow-up assessment. Attrition was due to passive or active withdrawal (n=37; 82%) with a small number related to participants' death (n=8; 18%). Baseline characteristics have also been previously described. (18, 37) Briefly, participants were mainly male (60%) with a mean age of 58 years (SD = 10), non-Hispanic White (76%), married (71%), completed some college or higher (73%), and were full-time employed (59%). Almost half (48%) of the sample had advanced disease RCC (stage III or IV). Regarding their religious background, 40 (31%) identified as Catholic, 60 (47%) as Protestant, 14 (11%) as "other", 2 (1.6%) as Jewish, and 9 (7%) reported to be "not religious". When asked "To what extent does religion play a big role in your life?", 57 (45%) endorsed "a great deal"; 29 (23%) "quite a bit"; 23 (18%) "somewhat"; 13 (10%) "very little" and 4 (3%) "not at all".

Descriptive Analyses

Descriptive Analyses of Religious Content of Writing Sample Analyses.—Of the 138 participants assigned to the EW group, 117 completed at least one writing sample (102 completed all 4 writing sessions) of which 104 participants made at least one religious reference in their writings (89%). More specifically, 70% of participants made at least one positive RC comment (mean = 3.07, SD = 3.47; range = 0-15), only 8% made at least one negative RC reference (mean = 0.16, SD = .52; range = 0-3), 46% revealed at least one instance of private RE (mean = 1.07, SD = 1.99 range = 0-11), and 42% revealed at least one collective RE reference (mean = 0.91, SD = 1.68; range = 0-10). Bivariate correlation analyses of religious content codes revealed that positive RC was significantly associated

with negative RC ($r=.31$, $P<.01$), private RE ($r=.35$, $P<.001$), and collective RE ($r=.24$, $P<.05$). Negative RC was not significantly associated with private or collective RE, and private and collective RE were also not significantly associated with each other.

Association between Religious Content of Writing Sample and Ironson-Woods

R/S Scale.—Bivariate cross-sectional correlation coefficients between the R/S content and all baseline self-reported measures along with means and SD's of all study variables are presented in Table 1. Of note, bivariate correlation analyses of religious writing content and baseline self-report R/S revealed significant associations between positive RC and the following subscales of the Ironson-Woods R/S scale: sense of peace (SOP; $r=.52$, $P<.0001$); faith in God (FIG; $r=.46$, $P<.0001$); religious behavior (RB; $r=.50$, $P<.0001$); and compassionate view of others (CV; $r=.43$, $P<.0001$). Negative RC was not significantly associated with any of the Ironson-Woods R/S subscales. Private RE was associated with SOP ($r=.25$, $P<.05$), FIG ($r=.31$, $P<.01$) and RB ($r=.25$, $P<.05$). Collective RE was only significantly associated with CV ($r=.24$, $P<.05$).

Descriptive Analyses of Religious Content and Baseline Self-Report

Measures.—Bivariate correlation analyses revealed that private RE was negatively associated with the BFI scale ($r=-.21$, $P=.05$) so that the more private RE revealed in one's writings, the less fatigue was reported. Moreover, negative RC was significantly positively associated with PSQI scores ($r=.23$; $P<.05$) so that the more negative RC reported, the greater the sleep disturbances. No other associations between religious content and self-report baseline measures were significant.

Regarding self-reported R/S, only the RB subscale was associated with the MOS-SSS ($r=.19$, $P<.05$) suggesting that those reporting higher R/S also reported higher social support. No other associations between the Ironson-Woods R/S subscales and symptom and psychosocial measures were significant at baseline.

Main Study Analyses

Raw means of each of the symptom and psychosocial outcomes by time point can be found in the original trial publication. (18)

Cancer-Related Symptoms.—Based on MLM analyses adjusting for baseline levels and other aforementioned covariates, private RE was significantly inversely associated with MDASI scores ($b=-.13$; $t=-2.20$; $P=.03$; 95% CI $[-.24, -.01]$) across the follow-up period suggesting that those writing about private RE reported lower cancer-related symptoms. No other effects were significant (positive RC: $t=.41$; $P=.68$; 95% CI $[-.06, .09]$; negative RC: $t=.20$; $P=.84$; 95% CI $[-.37, .46]$; and collective RE: $t=-1.07$; $P=.29$; 95% CI $[-.20, .06]$). Similarly, self-reported R/S (Ironson-Woods R/S questionnaire) was not significantly associated with cancer-related symptoms across the follow-up period ($t=.08$; $P=.93$; 95% CI $[-.01, .01]$).

Psychological Distress.—Negative RC was significantly associated with increased GSI scores ($b=.15$; $t=2.95$; $P=.004$; 95% CI $[-.05, .26]$) across the follow-up period so that those with higher negative RC references reported greater psychological distress over time. Private

RE was marginally significantly negatively associated with GSI scores ($b=-.02$; $t=-1.90$; $P=.06$; CI $[-.06, .00]$) across the follow-up period suggesting that those with higher private RE reported less psychological distress. Positive RC ($t=1.24$; $P=.22$, CI $[-.01, .03]$), collective RE ($t=.52$; $P=.60$, CI $[-.03, .06]$) and self-reported R/S ($t=-1.35$; $P=.18$; 95% CI $[-.01, .01]$) were not significantly associated with psychological distress.

Fatigue.—None of the religious content variables and self-reported R/S were significantly associated with the BFI scores across the follow-up period (positive RC: $t=-.11$; $P=.91$; 95% CI $[-.12, .11]$; negative RC: $t=-.45$; $P=.66$; 95% CI $[-.80, .51]$; private RE: $t=-1.70$; $P=.09$; 95% CI $[-.33, .03]$; collective RE: $t=-1.01$; $P=.31$; 95% CI $[-.31, .10]$); and self-reported R/S ($t=-.95$; $P=.36$; 95% CI $[-.02, .01]$).

Sleep Disturbances.—None of the religious content variables and self-reported R/S were significantly associated with the PSQI scores across the follow-up period (positive RC: $t=.35$; $P=.72$; 95% CI $[-.19, .28]$; negative RC: $t=-1.50$; $P=.14$; 95% CI $[-2.13, .30]$; private RE: $t=-.30$; $P=.76$; 95% CI $[-.48, .35]$; collective RE: $t=-.89$; $P=.38$; 95% CI $[-.55, .21]$); and self-reported R/S ($t=-.12$; $P=.91$; 95% CI $[-.03, .03]$).

Social Support.—Positive RC and self-reported R/S were marginally significantly negatively associated with MOS-SSS scores ($b=-.79$; $t=-1.83$; $P=.07$; 95% CI $[-1.65, .07]$ and ($b=-.10$; $t=-1.77$; $P=.08$; 95% CI $[-.21, .01]$, respectively) across the follow-up period; those with higher private RE and self-reported R/S reported lower social support. The other associations were not significant (negative RC: $t=-1.58$; $P=.12$; 95% CI $[-10.45, 1.19]$; private RE: $t=.91$; $P=.36$; 95% CI $[-.76, 2.03]$; and collective RE: $t=-.88$; $P=.38$; 95% CI $[-2.77, 1.07]$).

Results for the type 3 tests for fixed effects (i.e., unique effects) from each MLM model are portrayed in the supplemental materials (Supplemental Tables 1–6).

DISCUSSION

Rather than solely relying on self-report measures of R/S which are prone to self-presentation biases, the current study evaluated the unprompted religious content of emotional writing samples of participants in an expressive writing intervention. Consistent with contemporary conceptualizations of religious coping, we evaluated the writing samples for positive and negative RC along with references revealing private and collective RE and examined cross-sectional associations between these R/S variables and self-reported R/S as well as prospective associations of these R/S variables with cancer-related symptoms and psychosocial outcomes over time. We found that 89% of the sample made at least one religious reference in their expressive writing, which is consistent with their self-reported affirmation of religion playing “a great deal” or “quite a bit” of a role in their lives as assessed from the background questions.

When we examined the association between religious references in the writing samples and the Ironson-Woods R/S questionnaire, associations were more apparent for positive RC. Positive RC was strongly associated with Ironson-Woods R/S subscales of sense of peace,

faith in God, religious behavior, and compassionate view of others. Negative RC as assessed via participants' writing samples was not significantly associated with any of the self-reported R/S subscales. We also found that private RE was associated with the sense of peace, faith in God, and the religious behavior subscales. Lastly, collective RE was only significantly associated with the compassionate view subscale. These findings suggest that, similar with other frequently used R/S measures, the Ironson-Woods questionnaire appears to assess R/S from a rather unidimensional perspective omitting negative aspects of R/S.

Regarding the cross-sectional analyses of writing content and symptom and psychosocial variables at baseline, negative RC was significantly positively associated with sleep disturbances, and private RE was negatively associated with fatigue. Surprisingly, only the religious behavior subscale of the Ironson-Woods R/S questionnaire was significantly associated with social support. No other subscale was significantly associated with any of the other self-reported study variables. These lack of significant associations between self-reported R/S and outcomes may be due to a potential ceiling effect due to high scores for all patients (total score mean = 104; median = 112; mode = 125 with a range of possible scores of 25-125).

We also revealed evidence for prospective associations between the religious content of the writing samples and symptom outcomes over a 10-month assessment period. More specifically, private RE was significantly associated with cancer-related symptoms revealing that those more frequently writing about private RE reported lower cancer-related symptoms over time. As expected, those who wrote more often about negative RC reported increased psychological distress across the follow-up period. We only found a marginally significant association of private RE and psychological distress, such that those who more frequently wrote about private RE reporting lower psychological distress. However, this finding requires further exploration in future studies. Somewhat surprisingly, here was no association between Ironson-Woods R/S questionnaire and longitudinal outcomes. However, again, the noted ceiling effect may account for these results.

Our research expands the R/S literature in a significant manner. For one, it is one of the few studies that has established an association between R/S and symptom and psychosocial outcomes using a multi-method assessment approach. The vast majority of studies have been limited by common method variance and thus associations may be inflated. Secondly, because our assessment strategy of R/S was based on writing prompts that did not include R/S questions, it may authentically represent patient's coping experience with a cancer diagnosis and treatment reducing biases associated with self-presentation. Because the writings were unprompted regarding participants' R/S experiences, those who naturally included R/S content in the processing of their cancer experience may have deeply integrated R/S in their identity, which in turn may facilitate innate resilience.(38) Yet, future studies that focuses on in-depth evaluations of coping, resilience, and R/S is needed to uncover underlying mechanism between R/S coping and QOL. Moreover, because we did not only reveal cross-sectional but also prospective associations between religious writing content and symptom outcomes our findings possibly point to a directionality between religious coping and symptoms over time.

Of note, our findings also support the existing literature. More specifically, the finding that the greater the amount of spontaneous writing about positive religious expression/coping in expressive writing samples, the better the self-reported outcomes were over time supports the assertions of meta-analyses suggesting that R/S is associated with mental and physical health and overall physical wellbeing. (5, 6) Moreover, the findings that writing about negative RC was prospectively associated with increased psychological distress over a 10 months period support the work of Sherman et al. where negative religious coping was related to increased distress. (13) Thus, this study further supports the importance of considering both positive and negative R/S coping.

Regarding clinical implications, given the large proportion of religious people in the US (3) and the findings in this study, providers could acknowledge patient's naturally occurring positive R/S coping practices if this topic arises in the medical consultation. Similarly, being sensitive to negative R/S coping and/or spiritual distress independent of psychological distress may be of value as spiritual distress is associated with poor outcomes as revealed here as well by others examining patients in the advanced cancer setting.(39, 40) These findings support the complexity of the psychosocial construct of R/S and that multiple approaches for assessment are needed to reveal the true "benefits" and "risks" of engaging in R/S to cope with a life threatening illness. Future research is needed using validated qualitative research techniques to assess the role of R/S in coping with illness to help guide development of spiritually-based intervention programs.

Our study has several limitations. For one, the participants identified primarily as Christian (78%) and only 13% indicated that religion plays a very little or no role in their lives. Thus, it is unclear how these findings may generalize to samples with a different spiritual background and other beliefs. Similarly, the lack of significant findings between self-reported R/S on the Ironson-Woods R/S Index and symptom and psychosocial outcomes may be due to a ceiling effect, as the majority of participants reported high R/S scores and there was little variance. However, the behavioral coding of the qualitative writing samples was associated with multiple measures over time. Besides religious affiliation and affinity, our sample was rather homogenous regarding education, as over two-thirds were at least college educated. Moreover, R/S content was assessed in writing samples that were completed over a 10-day period and we do not know how participants R/S coping and engagement may change over time. In the same vein, this study was not designed to identify mechanisms by which private RE appears to be beneficial and negative RC detrimental.

In conclusion, the results of this multi-method study suggest that positive RC as measured by writing content analyses was most strongly and negative RC was not significantly associated with a validated self-reported measure of R/S. Private RE (e.g., praying, scripture reading, meditation) was prospectively associated with reduced cancer-related symptoms and distress and negative R/S was prospectively associated with increased psychological distress. This research supports findings in the literature suggesting that R/S plays an important role in cancer patients' coping experience and health-related QOL.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Key message:

Religious coping was assessed in the emotional writings of renal cell carcinoma patients.

Positive religious coping was strongly associated with self-reported religion/spirituality whereas negative religious coping was not. Private religious engagement was associated with lower levels of cancer-related symptoms and distress and negative religious coping was associated with higher levels of distress over a 10-month period.

Table 1.
Correlation Coefficients between Baseline Self-Reported Study Variables and Religious Content Variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. MDASI (n=138)	1.38	1.39	--													
2. BSI-GSI (n=137)	0.33	0.34	**	--												
3. BFI (n=138)	2.57	2.25	***	***	--											
4. PSQI (n=117)	6.72	4.00	***	***	**	--										
5. MOS-SSS (n=125)	86.05	15.52	**	***	**	***	--									
6. R/S Total (n=122)	104.63	21.77	-.02	-.02	.02	-.09	.16	--								
7. SOP (n=122)	38.33	8.24	-.10	-.11	-.02	-.16	.17	--	--							
8. FIG (n=122)	25.14	5.89	.04	.06	.07	-.05	-.05	--	.84***	--						
9. RB (n=125)	19.20	5.63	.06	.07	.04	.00	.19*	--	.76***	.77***	--					
10. CV (n=125)	21.89	4.00	-.04	-.03	.01	-.06	.16	--	.72***	.66***	.75***	--				
11. Positive RC (n=90)	3.07	3.47	-.09	.02	-.05	.22	-.02	.53***	.52***	.46***	.50***	.43***	--			
12. Negative RC (n=90)	.16	.52	.06	.06	.10	.23*	-.08	.17	.14	.11	.18	.21	.31**	--		
13. Private RE (n=89)	1.07	1.99	-.10	-.01	-.21	-.12	.08	.28**	.25*	.31**	.25*	.21	.35**	.09	--	
14. Collective RE (n=89)	.91	1.68	.05	-.07	.05	-.04	.08	.16	.09	.10	.20	.24*	.24*	.12	.09	--

Note.

* p 0.05.

** p<0.01.

*** p<0.001;

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MDASI, MD Anderson Symptom Index Total Score; BSI-GSI, Brief Symptom Inventory-Global Severity Index; BFI, Brief Fatigue Inventory; PSQI, Pittsburgh Sleep Quality Index Total Score, MOS-SSS, Medical Outcomes Study Social Support Survey; R/S Total, Ironson-Woods Spirituality/Religiousness (SR) Index Total Score, SOP, sense of peace; FIG, Faith in God; RB, Religious Behavior; and CV, Compassionate View of Others; RC, Religious Coping, RE, Religious Engagement