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Cancer family caregiver depression: are religion-related variables important?

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BACKGROUND

Clinical depression is a major public health burden in the United States effecting approximately 6% of the population per annum [1]. The economic burden of clinical depression was estimated in 2000 at \$83 billion dollars [2]. The costs to individuals and families affected by clinical depression extend far beyond the dollar value [3]. Cancer family caregivers, defined as individuals who provide physical, emotional, and other support without remuneration to an individual with cancer [4], are especially vulnerable to depression. Prevalence estimates for clinical depression in the cancer family caregiver population range as high as 39% [5], which is many times that of the general population. Numerous descriptive studies have attempted to identify explanatory variables for depression in the cancer family caregiver population. This descriptive work has led to widespread perception in the field that caregivers who are young, female, and/or white, as well as those who have cared for their ill family member for an extended period of time, are more inclined toward clinical depression and depressive symptoms than their older, male, non-white counterparts, and those who have been caregivers for a shorter timeframe [6–8]. Undermining this perception however, is the research that finds *no* differences in clinical depression and depressive symptoms among cancer family caregivers by age, gender, ethnicity, or length of time as caregiver [9, 10]. The discrepant findings led us to consider other previously unexplored variables, such as religion-related variables, that might help predict depressive symptoms in the cancer family caregiver population.

There is growing evidence that certain religion-related variables, such as religious affiliation, frequency of attendance at religious services, and prayer, can mitigate depressive symptoms in some populations [11, 12]. Spirituality is a related though distinct construct from religion. We chose to limit this study to religion-related variables so we could build on the existing body of scientific evidence exploring organizational religiosity and depressive symptoms [11,12]. To date, religion-related variables have been minimally studied with cancer family caregiver populations. The few cancer family caregiver studies with religion-related variables that have been published focus on bereaved caregivers rather than

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CONFLICT OF INTEREST

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caregivers actively engaged in providing care to an individual with cancer [10, 13]. In an effort to explicate the influence of religion-related variables on depressive symptoms among cancer family caregivers, we asked the following research questions: Do cancer family caregivers differ from the general population in terms of religious affiliation, frequency of attendance at religious services, and prayer? Is caregiver prayer associated with caregiver depressive symptoms? Is frequency of attendance at religious services associated with caregiver depressive symptoms?

METHODS

Study Design

We conducted a cross-sectional survey study, previously described in detail elsewhere, of 150 caregivers of patients with stage II or IIIa lung or stage II or III colon cancer receiving chemotherapy with curative intent [14–16]. Using population-based sampling techniques, all patients presenting for chemotherapy at the Yale Comprehensive Cancer Center between May 2008 and March 2009 with the type and stage of cancer examined in this study were referred to the principal investigator (AW) and were asked to identify their primary family caregiver and provide contact information.

During the enrolment period, 172 patients were approached and 165 of these patients referred us to caregivers. Only 15 of the caregivers chose not to participate, most frequently citing “lack of time” as their reason. Thus a sample of 150 (90.9% of the caregivers we approached) accepted our invitation to participate.

Data Collection and Measurement Instruments—Face to face interviews were conducted. Demographic information and religion-related variables (described below) were collected and participants completed four survey instruments, namely the Center for Epidemiological Studies–Depression Scale (CES-D) [17], Caregiver Reactions Assessment (CRA) [18], Big Five Inventory (BFI) [19], and Determinants of Meditation Practice Inventory (DMPI) [14]. Results of the CES-D, CRA, and BFI as explanatory variables for the DMPI with our study sample have been reported previously [14–15]. We have also reported relationships of education, Latino ethnicity, and CRA with the CES-D [16]. The study described here is a secondary data analysis that used the following explanatory variables: age, gender, length of time as caregiver, frequency of attendance at religious services, and the 2002 National Health Interview Survey Alternative Health Supplement (NHIS) question, “Have you ever prayed specifically for the purpose of your OWN health?” [20]. Since our study is investigating variables that influence *caregiver* depressive symptoms, the NHIS prayer question is ideal in specifically querying the respondent’s own health. The NHIS Alternate Health Supplement was rigorously developed using a multi-step process that included literature review, expert panel input, and cognitive testing [21]. The prayer question has been used with 30,785 study participants which increases confidence in its content validity.

The outcome variable was the Center for Epidemiological Studies–Depression Scale (CES-D) score. The CES-D total scale score may range from 0–60, with a score of 16 or more indicating clinically significant depressive symptomatology [17]. The CES-D has been used

extensively with cancer family caregiver populations; internal consistency has been consistently around 0.90 [22, 23].

The Human Investigations Committee at Yale University School of Medicine approved the research study.

Statistical Analysis

We used frequencies (percents) for qualitative variables and means (standard deviations) for quantitative variables to describe the demographic and religious characteristics of the cancer family caregiver study sample. The one proportion z test was used to compare the sample proportions to a national survey. To answer our questions, *Is caregiver prayer associated with caregiver depression?* and *Is frequency of attendance at religious services associated with caregiver depression?*, we ran multiple linear regression models with CES-D total scores as the dependent variable, and prayer (response option: yes/no) and attendance at religious services variable (response options: never, occasionally, frequently) as independent variables. Based on previous analyses with this study sample [15, 16], the following were entered into the multiple regression models as control variables: age, gender, caregiver spouse/non-spouse to patient, and length of time as caregiver. Additionally, we dichotomized CES-D (≥ 16 vs <16) at the generally accepted cut-score for clinically significant depression symptomatology [17]. The dichotomized CES-D was used to perform multiple logistic regression to test if prayer and attendance at religious services predicted clinically significant depressive symptomatology controlling for the same variables as the linear regression.

RESULTS

Characteristics of caregiver sample

Demographic characteristics of the 150 participating caregivers are summarized in Table 1. The sample was approximately two-thirds female ($n=98$; 65.3%). Most caregivers identified as white; 8% of the sample identified as Latino/Hispanic and 8% identified as African-American. Length of time in the role of caregiver was close to 14 months and the average age of the caregivers was about 52 years.

The religion-related variables are shown in Table 1. Of the 150 participants, one person did not respond to the queries about religious affiliation and attendance at religious service. Approximately half the sample identified as having a Catholic religious affiliation. In addition, participants identified a broad spectrum of religious affiliations, including several Protestant and Orthodox Christian religions, Judaism, Islam, Hinduism, Buddhism, Pagan rites, Atheism, Agnosticism, Baha'i, Mormonism, and Unitarianism. Approximately one-third of participants reported attending religious services regularly. Approximately two-thirds of participants responded yes to the query, *"Have you ever prayed for your OWN health?"* Further details about the religion-related variables are found in Table 1.

When compared to national data ($N=35,556$) and state of Connecticut data ($n=852$) from the 2007 Religious Landscape Survey, the study sample had lower representation of those with no religious affiliation (10.7% versus 16.1% national, $p=0.07$ and 23.0% CT, $p=.001$) and

higher representation of Catholics (53.3% versus 23.9% national, $p<.001$ and 43.0% CT, $p=.018$) [24, 25]. Similarly, attendance at religious services was reported at a higher rate in the study sample than that reported by the Third National Health and Nutrition Examination Survey (NHANES III) ($N=14,223$) (81.3% versus 67.2%, $p<.001$) [26] and by the Religious Landscape Survey for state of Connecticut ($n=852$) (81.3% versus 30.0%, $p<.001$) [25]. In addition, the percentage of participants who responded affirmatively to the query, “Have you ever prayed specifically for the purpose of your OWN health?” was much higher than the national data from the 2002 National Health Interview Survey Alternative Health Supplement (NHIS) from which the question was derived. The NHIS ($N=30,785$) showed 42.9% of respondents answering affirmatively, as compared to 65.3% for this study ($p<.001$) [27]. The NHIS prayer data is not available by state.

Regression Analyses

The mean CES-D score for caregivers who prayed for their own health was lower than those who did not pray (10.4, $SD=8.7$ versus 12.2, $SD=9.1$ respectively); however, when adjusting for covariates in the regression model this difference was not statistically significant ($p=.17$). Table 2 displays the results from the regression model, both unadjusted and adjusted for covariates. Of the 98 caregivers who prayed, 20 (20.4%) had clinically significant depressive symptomatology (CES-D ≥ 16). Of the 52 caregivers who did not pray, 12 (23.1%) had clinically significant depressive symptomatology. Adjusting for covariates in the logistic model showed no difference in rates of clinically significant depressive symptomatology ($p=.68$). Table 3 shows the unadjusted and adjusted logistic regression results.

After adjusting for covariates, frequency of religious services was significantly associated with CES-D score ($p=.004$). Caregivers who never attended services had the highest mean CES-D score (14.7, $SD=9.6$), while those who occasionally attended services had the next highest mean (11.9, $SD=9.5$), and those who regularly attended services had the lowest mean (7.8, $SD=7.0$). Contrast comparisons revealed those who regularly attended services significantly differed from those who never attended ($p=.002$) and occasionally attended ($p=.009$), but those who occasionally attended services did not differ from those who never attended ($p=.25$).

Model 2 in Table 2 shows the regression results in which those who never attended services comprise the reference group. Of the 27 caregivers who never attended services, 6 (22.2%) had clinically significant depressive symptomatology, which was similar to those who occasionally attended services, among whom 18 out of 71 (25.4%) had clinically significant depressive symptomatology. Those who attended services regularly had the lowest rate of clinically significant depressive symptomatology (7/51 or 13.7%). Adjusting for covariates in the logistic model showed no difference in rates of clinically significant depressive symptomatology between the three levels of attending religious services ($p=.25$). While not statistically significant, the odds of having clinically significant depressive symptomatology were 47% lower for caregivers who attended services regularly compared to those who never attended services [OR (C.I.) 0.53 (0.15–1.92), $p=.087$]. Model 2 in Table 3 shows the logistic regression results for religious services attendance after controlling for covariates.

In the study sample, women were significantly more likely to pray than men (73.5% vs 50.0%, $p=.004$) and more likely to attend religious services ($p=.039$). To determine if gender moderated the association between prayer and religious services attendance with depressive symptoms (CES-D total score) and clinically significant depressive symptomatology (CES-D 16), the previous regression models were rerun with the interaction of gender with prayer and gender with religious services attendance included. There was no significant interaction effect between gender and prayer on CES-D total score ($p=.55$) or CES-D 16 ($p=.49$). Similarly, there was no significant interaction effect between gender and frequency of religious services attendance on CES-D total score ($p=.81$) or CES-D 16 ($p=.92$).

DISCUSSION

The cross-sectional study reported here, aims to preliminarily explicate the influence of religion-related variables on depressive symptoms among cancer family caregivers. Based on our study sample, results indicate cancer family caregivers may differ from the general population in terms of religious affiliation, frequency of attendance at religious services, and prayer. Prayer for one's own health was not associated with depressive symptoms in our study sample; however, frequency of attendance at religious services showed a linear trend associated with caregiver depressive symptoms. When using the widely recognized CES-D cut-score as an indicator of clinically significant depressive symptomatology, there were no differences among the groups by frequency of attendance at religious services. The cross-sectional design of our study and having study participants recruited from a single site constrain the interpretability of our results. However, by placing our study in the context of the existing literature on religion-related variables and depression, we are able to use this Discussion section to extrapolate and project relationships among the variables that are worthy of future investigations.

The National Health Interview Survey from which the prayer question was derived is a population based survey of the civilian, non-institutionalized U.S. population and is not limited to cancer family caregivers [21]. It is possible that one's prayer practices change when one assumes the role of caregiver, in particular in regard to prayer for one's own health. In order to satisfy the demanding responsibilities of a caregiver, one must be reasonably healthy. Two of the items on the Caregiver Reactions Assessment (CRA) are, "*I am healthy enough to care for [patient's name]*" and "*I have enough physical strength to care for [patient's name]*." While administering the (CRA) to this study population, in addition to Likert scale responses to these items, several participants spontaneously remarked to the investigator (AW) that they were grateful to God to be able to be a caregiver and/or that they prayed to God to be able to continue in the role. Formal notations of the qualitative commentary provided by participants completing the surveys were not made, so no further assessment of these types of responses can be conducted at this time. The anecdotal observations, however, support the idea that cancer family caregivers may be compelled to pray for their own health so they can meet their responsibilities as caregivers.

As noted by Weitzner et al several years ago, family caregivers are in the unique and inescapable position of witnessing the challenges of the person with cancer [29]. Many cancer family caregivers and their ill family member are bound together on a path that starts

with the time of diagnosis and continues through survivorship or death. Along this path, cancer family caregivers have their own personal experiences and also witness their ill family member's experiences of aggressive care and its aftermath [30, 31]. The cancer family caregiver's proximity to the patient's pain, anguish, and physical deterioration may motivate them to explore religious activities.

Another possibility for higher representation of religious affiliation, attendance at religious services, and prayer for one's own health among the study sample as compared to the national and state samples, may stem from a phenomenon called Personal Death Awareness. As the name implies, Personal Death Awareness refers to an individual's understanding and appreciation for his/her mortality [28]. While we all know we will certainly die someday, most healthy adults do not perseverate on their mortality. Triggers to focus on one's mortality include the death of a loved one, the death of a peer, and personally experiencing a catastrophic or life-altering illness [28]. It is possible that assuming the role of cancer family caregiver may also be a trigger. Perhaps the daily exposure to and sharing experiences of threatened mortality heightens one's awareness of the omnipresence of death, motivating caregivers to seek solace and support in religious activities. While our discussion of heightened Personal Death Awareness among cancer family caregivers is conjecture, it appears to be fertile ground for future research.

Higher representation of religious affiliation, attendance at religious services, and prayer for one's own health among the study sample as compared to the national and state samples may simply be a function of who chooses to fulfill the role of cancer family caregiver. It is possible that individuals who attend religious service and have a prayer practice are more inclined than the general population to assume the roles and responsibilities of caregiving.

Considering the significance of the frequency of attendance at religious services in the presence of the *lack* of association between prayer practices and depressive symptoms, it appears the protection afforded by attendance at religious services likely extends beyond prayer to social support and perhaps other factors. Several recent studies have attempted to differentiate various religion-related variables in an effort to discern their individual impact on mental health and quality of life outcomes [32]. This effort has led to the characterization of religious variables as extrinsic or public (as in attendance at religious services) versus intrinsic or private (as in prayer) [33, 34]. A 2003 meta-analysis by Smith et al shows most studies report a protective effect against clinical depression from extrinsic practices (attendance at religious services), independent of one's intrinsic practices (prayer). Our results are consistent with the findings from the meta-analysis.

In addition to the social support offered by extrinsic religious practices, several researchers have postulated that attendance at religious services can help an individual avoid behaviors that can aggravate or intensify depressive symptoms, such as alcohol and drug use. The physiologic responses to music, singing, and rhythmic recitation may also be health-enhancing and potentially allay depressive symptoms [35]. The religious teachings and stories of perseverance and courage in the face of suffering may offer succor and defense against depressive symptoms for cancer family caregivers. It is possible that the presence of the cancer family caregiver at religious services may motivate others in the community to

pray for the caregiver. The intercessory prayers from others may benefit the caregiver, including mitigating depressive symptoms [36]. Other possibilities include the benefit that comes from acknowledgement of their caregiving role by the community, as well as the structure and sense of normalcy that attendance at religious services can provide during stressful and chaotic times.

While the literature largely privileges the positive effects from religion-related variables, one must recognize the potential negative effects from both extrinsic and intrinsic religious practices. For example, some individuals may feel they are being criticized and/or judged by their religious community rather than supported [37, 38]. Intrinsic practices like prayer guide an individual to frame a stressor as being part of a Divine plan, and therefore benevolent, or, alternatively, as being a punishment from God or abandonment by God, and therefore malevolent [39]. The negative aspects of extrinsic and intrinsic religious practices have been shown to exacerbate depressive symptoms and distress [38, 40].

Cancer family caregivers who have more depressive symptoms might be less inclined to attend religious services. Loss of interest in common activities and a tendency to socially isolate are two characteristics of clinical depression that might interfere with attendance at religious services [41]. Similarly, caregivers who provide physical care for their ill family member, and caregivers who have their own compromised health status, may not be able to leave their home to attend religious services. Future research of the association between religion-related variables and depressive symptoms should endeavor to include caregiver physical function and health status as control variables. The cross-sectional design of the survey does not allow us to discern if depressive symptoms and/or attendance at religious services changed over time.

CONCLUSIONS

Our study contributes to the growing body of research investigating the links between religion-related variables and depressive symptoms. Specific to the cancer family caregiver literature, our study indicates religion-related variables may be associated with depressive symptoms and may have been overlooked variables in previous efforts to identify risk factors for clinical depression in the cancer family caregiver population. Clinicians can consider exploring religious practices with cancer family caregivers and support attendance at religious services as a potential preventive measure for depressive symptoms.

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Table 1

Caregiver demographics and religious characteristics (N=150).

DEMOGRAPHICS	Frequency	Percentages
Gender		
Female	98	65.3%
Male	52	34.7
Relationship to Patient		
Spouse/Partner	67	44.6%
Non-spouse	83	55.3
Ethnic Background		
Latino	12	8.0%
Not Latino	138	92.0
Race^a		
White	125	83.2%
African-American	12	8.0
Asian/Asian-American	6	4.0
Other	2	1.3
Length of Time as Caregiver in months		
Mean $\pm$ SD	13.9	$\pm$ 18.5
Age in years		
Mean $\pm$ SD	52.3	$\pm$ 16.2
RELIGIOUS CHARACTERISTICS		
Religious Affiliation		
None	16	10.7%
Protestant	37	24.7
Catholic	80	53.3
Jewish	4	2.7
Other	12	8.0
Not reported	1	0.7
Attendance at Religious Service		
Never	27	18.0%
Occasionally	71	47.3
Regularly	51	34.0
Not reported	1	0.7
Ever prayed for own health?		
No	52	34.7%
Yes	98	65.3

Total respondents for Race: N= 145.

Note: Not all percentages equal 100 due to rounding.

Unadjusted and adjusted linear regression results for depressive symptoms (CES-D Total Score).^a

Table 2

Control Variables	B	SEB	Model 1		Model 2	
			Beta	P-Value	Beta	P-Value
Age	-.03	.05	-.05	.56		
Gender (Female)	-.58	1.54	-.03	.71		
Care length in months	-.05	0.04	-.11	.19		
Spouse	1.01	1.65	.06	.54		
Independent Variable						
Prayer	-2.20 (1.62)	-.12	.17			
Religious Attendance						.004
Never					Reference	
Occasionally					-2.23 (2.00)	-.13 .25
Regularly					-6.91 (2.21)	-.37 .002

^aThe covariate effects shown above the horizontal line are before the primary independent variables were included in the model to show how they associate with the dependent variable. Underneath the horizontal line, shown as Model 1, is the effect of prayer adjusted for the covariates. Model 2 is the effect of religious attendance adjusted for the covariates.

Table 3 Unadjusted and adjusted logistic regression for clinically significant depressive symptomatology (CES-D 16).^a

Control Variables	B	SEB	OR	95%CI	P-Value
Age	-.005	.014	1.00	0.97–1.02	.71
Gender (Female)	-.009	.421	0.98	0.43–2.26	.98
Care length in months	-.011	.013	0.99	0.97–1.02	.41
Spouse	.236	.455	1.27	0.52–3.09	.54

Independent Variable	Model 1			Model 2		
	B (SEB)	OR (95%CI)	P-Value	B (SEB)	OR (95%CI)	P-Value
Prayer	-.18 (.44)	0.84 (0.36–1.97)	.68			
Religious Attendance						
Never				reference		.25
Occasionally				.21 (.55)	1.23 (0.42–3.62)	.71
Regularly				-.64 (.66)	0.53 (0.15–1.92)	.087

^aThe covariate effects shown above the horizontal line are before the primary independent variables were included in the model to show how they associate with the dependent variable. Underneath the horizontal line, shown as Model 1, is the effect of prayer adjusted for the covariates. Model 2 is the effect of religious attendance adjusted for the covariates.