Religious Struggle as a Predictor of Mortality Among Medically Ill Elderly Patients

A 2-Year Longitudinal Study

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Background: Although church attendance has been associated with a reduced risk of mortality, no study has examined the impact of religious struggle with an illness on mortality.

Objective: To investigate longitudinally the relationship between religious struggle with an illness and mortality.

Methods: A longitudinal cohort study from 1996 to 1997 was conducted to assess positive religious coping and religious struggle, and demographic, physical health, and mental health measures at baseline as control variables. Mortality during the 2-year period was the main outcome measure. Participants were 596 patients aged 55 years or older on the medical inpatient services of Duke University Medical Center or the Durham Veterans Affairs Medical Center, Durham, NC.

Results: After controlling for the demographic, physical health, and mental health variables, higher religious

struggle scores at baseline were predictive of greater risk of mortality (risk ratio [RR] for death, 1.06; 95% confidence interval [CI], 1.01-1.11; χ^2 =5.89; P=.02). Two spiritual discontent items and 1 demonic reappraisal item from the religious coping measure were predictive of increased risk for mortality: "Wondered whether God had abandoned me" (RR for death, 1.28; 95% CI, 1.07-1.50; χ^2 =5.22; P=.02), "Questioned God's love for me" (RR for death, 1.22; 95% CI, 1.02-1.43; χ^2 =3.69; P=.05), and "Decided the devil made this happen" (RR for death, 1.19; 95% CI, 1.05-1.33; χ^2 =5.84; P=.02).

Conclusions: Certain forms of religiousness may increase the risk of death. Elderly ill men and women who experience a religious struggle with their illness appear to be at increased risk of death, even after controlling for baseline health, mental health status, and demographic factors.

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NUMBER OF studies have documented a positive and robust relationship between religiousness and reduced risk of mortality. More frequent church attendance, in particular, has been predictive of lower risk of mortality, after controlling for other confounding effects. 1-5 Private forms of religiousness (eg, personal religiousness, frequency of prayer, comfort from faith) have been less consistently and less strongly associated with mortality.6 Studies in this area have generally relied on global benign measures of religiousness (eg, frequency of church attendance, selfrated religiousness). The form of these measures does not allow for the possibility that specific negative religious beliefs and behaviors may increase the risks of

A few empirical studies indicate that certain negative forms of religiousness, while less common than positive religious expressions, may impact negatively on health status.⁷ In a study of medically ill hospitalized older adults, poorer health (eg, number of medical diagnoses, impairments in activities of daily life, self-rated health) was associated with indicators of religious struggle, including reports of anger at God, feeling punished by God, and believing that the devil was at work in the illness.⁸ In another study of medical rehabilitation patients, the patients' anger at God was predictive of poorer physical recovery 4 months later.⁹

No study as yet, to our knowledge, has examined whether certain negative forms of religiousness may increase the risk of mortality among those suffering from a medical illness. Conceivably, religious distress and struggle associated with an illness may exacerbate the effects of the illness and increase the risks of mortality.

In this study, we sought to determine whether religious struggle with an illness increases the risks of mortality in

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SUBJECTS AND METHODS

STUDY POPULATION

The initial sample for this study consisted of 596 persons aged 55 years or older who were hospitalized on the medical inpatient services of Duke University Medical Center, Durham, NC, or the Durham Veterans Affairs Medical Center, Durham, between January 1, 1996, and March 31, 1997. The older patient population in both hospitals is almost exclusively (>95%) Christian, with a majority of patients representing conservative (eg, Baptist) or mainline (eg, Methodist) Protestant denominations. 10,11 Detailed information about religious coping as well as physical and mental health were collected through interviews with these patients at the baseline hospital evaluation after their verbal informed consent was obtained, documented by the interviewer's signature or witnessed by a third person. A research assistant attempted to locate and contact by telephone each of the 596 patients, beginning with those first enrolled in the study in January 1996. Of the 596 patients, 268 survivors were located, 176 were identified as deceased, and 152 were either unable to be located or unable or unwilling to respond to the follow-up interview. Those unavailable for follow-up (25.5%) were disproportionately represented in the Veterans Affairs Medical Center, tended to be from a lower socioeconomic class, were more migratory, had fewer social connections, and were, therefore, more difficult to locate. The average number of days between baseline and follow-up was 632 (range, 381-986). The confirmation of death and date of death occurred through direct contacts with family members (50%), review of vital records in Raleigh, NC (25%), review of Duke University Medical Center or Durham Veterans Affairs Medical Center records (15%), or a search of the National Death Index (10%). This project was approved by the institutional reviews boards at Duke University Medical Center and Bowling Green State University, Bowling Green, Ohio.

RELIGIOUS COPING

Positive religious coping and religious struggle with the illness at baseline were measured with the Brief RCOPE. 12 This is a 14-item questionnaire that assesses the extent to which the patient uses specific methods of religious coping. Positive religious coping consists of 7 items that measure seeking spiritual support, seeking a spiritual connection, collaboration with God in problem solving, religious forgiveness, and benevolent religious appraisals of the illness. Religious struggle was measured by the negative religious coping subscale, which is made up of 7 items that assess punishing God appraisals, interpersonal religious discontent, demonic appraisals, spiritual discontent, and questioning God's powers. Patients indicate how often they engage in each form of religious coping on a 4-point scale from 0 (not at all) to 3 (a lot). This instrument has demonstrated good construct validity and internal consistency in medical settings and among people facing major life crises. 8,12 With respect to test-retest reliability, religious coping attitudes in older medical patients are generally stable over time (eg, >0.80). Measures of coping activities, however, are not expected to show high levels of stability because coping presumably changes during the course of hospitalization, treatment, and discharge. Nevertheless, among the survivors in this study, religious coping at baseline and follow-up were significantly intercorrelated according to both positive (r=0.75, P<.05) and negative (r=0.43, P<.05)P<.05) religious coping subscales.</p>

GLOBAL RELIGIOUSNESS

To provide a point of comparison with previous studies of religiousness and mortality, 3 traditional indexes of global religiousness were included. Patients indicated how often they attended church or other religious meetings on a 6-point scale from 6 (more than once a week) to 1 (never). They reported how often they spent time in private religious activities, such as prayer, meditation, or Bible study

a sample of medically ill elderly patients during a 2-year period.

RESULTS

Table 1 reports the comparison between survivors and deceased on demographic, physical health, mental health, positive religious coping, religious struggle, and global religious variables at baseline. Compared with the deceased, survivors were significantly younger and more educated at baseline. In addition, a larger proportion of survivors were white. With respect to physical health, in comparison with the deceased, survivors manifested significantly fewer active medical diagnoses, less severe ratings of illness, better subjective health, more independent functional status, and better cognitive functioning at baseline. In terms of mental health, survivors also reported better mood and better quality of life at baseline than participants who died before follow-up. With respect to positive religious coping and religious struggle, both groups reported low levels of religious struggle. However, in comparison with the deceased, survivors reported lower levels of religious struggle at baseline. In terms of the global religious indexes, survivors indicated that they attended church more frequently than participants who died before follow-up.

Cox regression analyses that took into account censored observations confirmed the results of the t tests. Religious struggle was a significant predictor of increased risk for mortality in the initial model (RR, 1.06; 95% confidence interval [CI], 1.02-1.11; χ^2 =9.04; P=.01). The effects of religious struggle remained significant after controlling for the demographic variables (RR, 1.07; 95% CI, 1.02-1.11; χ^2 =9.07; P=.01), the demographic and physical health variables (RR, 1.05; 95% CI, 1.00-1.10; χ^2 =4.37; P=.04), and the demographic, physical health, and mental health variables (RR, 1.06; 95% CI, 1.01-1.11; χ^2 =5.89; P=.02). The complete model is presented in **Table 2**. Age, illness severity, and poorer self-rated overall health were also associated with greater risk of mortality.

Additional Cox regression analyses were conducted to identify the specific religious struggle items on the negative religious coping subscale of the Brief RCOPE that were predictive of mortality. In these analyses, the religious struggle items from the Brief RCOPE were en-

on the same 6-point scale. Patients also indicated how important religion was to them on a 3-point scale from 3 (very important) to 1 (not important).

COVARIATES

We gathered information on 3 sets of potential confounding variables: demographic, physical health, and mental health. Several demographic variables were measured: age, race, sex, education, and hospital (Duke or Durham Veterans Affairs).

Physical health was assessed at baseline and follow-up through 5 established measures: (1) the number of active medical diagnoses as determined by physical examination of the patient and medical record review was counted; they were classified into 18 categories of illness based on the International Classification of Diseases, Ninth Revision, Clinical Modification, and summed13; (2) the severity of medical illness was measured by the American Society of Anesthesiologists Severity of Illness Scale 14; this scale is a singleitem observer-rated measure of global illness severity ranging from 0 (healthy) to 5 (severely ill); (3) cognitive status was measured by means of an abbreviated version of the Mini-Mental State Examination,15 developed and validated in elderly medical inpatients16; higher scores indicate better cognitive functioning; (4) functional status was assessed by the ability to independently perform 12 instrumental and 8 physical activities of daily living^{17,18}; higher scores indicate more dependence and less functional ability; and (5) subjective health was measured by a single item in the traditional manner (poor to excellent).

Mental health was measured at baseline and follow-up by 2 instruments. Depressive symptoms were measured with an 11-item self-rated scale that has been validated in older medical patients against clinically determined diagnoses of major depression¹⁹; higher scores indicate more depressive symptoms. Quality of life was assessed by means of a 5-item observer-rated quality-of-life index that assesses general activity, functioning, social support, health, and psychological functioning²⁰; higher scores indicate better quality of life.

DATA ANALYSIS

We used t tests and χ^2 statistics to compare survivors and deceased with respect to their demographic characteristics, physical health, mental health, positive religious coping and religious struggle, and global religiousness. These analyses did not take into account censored observations.

To determine whether religious coping was a significant predictor of mortality, we modeled the time until death by means of Cox regression analyses. This robust semiparametric procedure was chosen for its flexibility in handling censored observations, time-dependent predictors, and late entry into the study. For these analyses, all available data were used. Time to death was censored for surviving individuals, individuals we were unable to recontact, and individuals who were unable or unwilling to complete the follow-up interview. Time-dependent covariates allowed for inclusion of measures collected at both times for individuals who completed the 2 interviews. Four models were tested in hierarchical form: positive religious coping and religious struggle; positive religious coping, religious struggle, and demographics; positive religious coping, religious struggle, demographics, and physical health; and positive religious coping, religious struggle, demographics, physical health, and mental health. Parameter estimates for each predictor were tested via a χ^2 statistic. Additional information on the impact each predictor had on mortality was obtained through computation of risk ratios (RRs). Additional Cox regression analyses were conducted to identify the specific religious coping items from the Brief RCOPE that were predictive of mortality. Finally, Cox regression analyses were conducted to determine whether the global religious indexes were significant predictors of mortality.

tered into the equations in hierarchical form in the same manner as above. Two spiritual discontent and 1 demonic reappraisal item were identified as predictors of increased risk for mortality after controlling for demographic, physical health, and mental health variables: "Wondered whether God had abandoned me" (RR, 1.28; 95% CI, 1.07-1.50; χ^2 =5.22; P=.02), "Questioned God's love for me" (RR, 1.22; 95% CI, 1.02-1.43; χ^2 =3.69; P=.05), and "Decided the devil made this happen" (RR, 1.19; 95% CI, 1.05-1.33; χ^2 =5.84; P=.02). One punishing God reappraisal item ("Felt punished by God for my lack of devotion") was marginally predictive of mortality after controlling for demographic variables (RR, 1.16; 95% CI, 1.00-1.32; χ^2 =3.57; P<.06) but not after controlling for physical health and mental health.

Additional Cox regression analyses were conducted on the effects of the global religious variables on mortality after controlling for demographic, physical health, and mental health variables. Consistent with previous studies, more frequent church attendance was associated with a lower risk of mortality (RR, 0.87; 95% CI, 0.75-0.97; χ^2 =5.67; P=.02). When church attendance was entered into a Cox regression analysis with positive religious coping and religious

struggle as well as the control variables, religious struggle continued to predict mortality significantly (RR, 1.05; 95% CI, 1.00-1.10; χ^2 =4.37; P=.04) and church attendance was only marginally significant (RR, 0.88; 95% CI, 0.77-1.00; χ^2 =3.49; P<.06).

COMMENT

Several empirical studies have shown that religious involvement is predictive of lower mortality. ¹⁻⁵ To our knowledge, this is the first empirical study to identify religious variables that increase the risk of mortality. Religious struggle was associated with greater risk of mortality. Although the magnitude of the effects associated with religious struggle was relatively small (from 6% to 10% increased risk of mortality), the effects remained significant even after controlling for a number of possible confounding variables, including demographic, physical health, and mental health variables. Furthermore, we were able to identify specific forms of religious struggle that were more predictive of mortality. Patients' reports that they felt alienated from or unloved by God and attributed their illness to the devil were associated with a

Table 1. Comparison Between Survivors and Deceased on Baseline Variables*

Characteristic	Survivors (n = 268)	Deceased (n = 176)	P
Age, y	67.2 (8.0)	69.0 (9.0)	.04
Race, % black	32	38	.02
Sex, % F	50	42	.09
Hospital, % Duke	79	77	.69
Education, y	11.7 (6.0)	10.6 (3.9)	.05
Diagnoses, No.	5.0 (2.1)	5.6 (2.2)	.00
Subjective health score	2.0 (0.8)	1.8 (0.8)	.004
ADL score	25.3 (4.7)	26.8 (5.4)	.00
ASA score	2.8 (0.8)	3.2 (0.8)	.00
MMSE score	15.7 (2.5)	14.5 (3.0)	.00
Depressed mood	14.8 (2.7)	15.3 (2.8)	.07
Quality of life	6.7 (2.0)	6.1 (2.1)	.00
Positive religious coping	14.8 (6.4)	15.2 (5.8)	.54
Religious struggle	2.3 (3.3)	3.1 (4.0)	.04
Church attendance	4.1 (1.7)	3.7 (1.8)	.04
Private religious activities	5.2 (1.4)	5.2 (1.5)	.82
Religious importance	5.8 (0.5)	5.8 (0.5)	.92

^{*}Data given as mean (SD) unless otherwise specified. ADL indicates activities of daily living (functional status); ASA, American Society of Anethesiologists Severity of Illness Scale; and MMSE, Mini-Mental State Examination. P values were determined by univariate analyses (χ^2 or t test).

19% to 28% increase in risk of dying during the approximately 2-year follow-up period. It should also be noted that religious struggle was predictive of mortality, while other variables that have been implicated in longevity were not. For instance, mortality was not predicted by race, diagnosis, cognitive functioning, independence in daily activities, depressed mood, or quality of life.

It could be argued that these results are idiosyncratic to a distinctive sample. Contrary to this interpretation, however, frequency of church attendance was associated with reduced risk of mortality in this study, as has been reported by several other researchers. 1-5 In addition, as would be expected, in this sample, risk of mortality was related to age, ratings of illness severity, and subjective ratings of poorer health. Nevertheless, additional research is needed to determine whether these findings, based on a predominantly conservative and mainline Christian sample, are generalizable to other religious groups, including those in which religious struggles may be more normative or take other forms. In this vein, theologians from different religious traditions have suggested that at least some forms of religious struggle (eg, questions about God, practice, doctrine) are prerequisites to spiritual maturity.²¹

Questions could also be raised about the percentage of patients (25.5%) who were unavailable for follow-up. This rate of attrition is higher than we would have preferred and represents a weakness of the study. Nevertheless, follow-up rates of 70% to 80% are commonplace in longitudinal studies and are usually deemed acceptable. Furthermore, religious struggle was predictive of greater risk of dying even after statistical adjustments for potential biases in patient attrition.

Why should religious struggle increase the risk of dying? One possibility is that religious struggle causes poorer physical health. In support of this explanation, further analyses showed that religious struggle was pre-

Table 2. Cox Regression Estimates of Demographic, Mental Health, Physical Health, Positive Religious Coping, and Religious Struggle Variables on Mortality*

Variables	Adjusted Relative Risk (95% CI) (n = 567)	
Positive religious coping		
and religious struggle		
Positive religious coping	0.98 (0.95-1.01)	
Religious struggle	1.06 (1.01-1.11)†	
Demographic variables		
Age	1.39 (1.07-1.72)†	
Race	1.21 (0.83-1.59)	
Sex	0.71 (0.33-1.09)‡	
Hospital	1.14 (0.71-1.56)	
Education	0.98 (0.95-1.02)	
Physical health	,	
Diagnoses	1.04 (0.96-1.11)	
Subjective health	0.71 (0.47-0.95)§	
ADL	0.98 (0.93-1.03)	
ASA	1.54 (1.27-1.81)§	
Mental health	(1121 1121/3	
MMSE	0.96 (0.90-1.02)	
Depressed mood	0.95 (0.88-1.02)	
Quality of life	1.03 (0.89-1.16)	

^{*}CI indicates confidence interval; ADL, activities of daily living (functional status); ASA, American Society of Anesthesiologists Severity of Illness Scale; and MMSE, Mini-Mental State Examination.

dictive of declines in independence in daily activities among the survivors in this sample. Similarly, Fitchett et al⁹ found that the negative religious coping scale from the Brief RCOPE was predictive of significant declines over time in the same measure (activities of daily living) among a sample of medical rehabilitation patients. On the other hand, religious struggle was not generally predictive of declines in other measures of physical health among survivors in our sample, including subjective health, severity of illness ratings, and cognitive functioning. Nevertheless, religious struggle may go hand in hand with declines in immunologic functioning.²² or other health indexes that were not examined in this study.

Another possible explanation is that religious struggle is associated with emotional or personality differences that relate directly or indirectly to mortality. Other crosssectional studies have shown that religious struggle is related to higher levels of emotional distress²³ and symptoms of posttraumatic stress among survivors of the Oklahoma City bombing. 12 Similarly, Exline and colleagues²⁴ found that 2 dimensions closely related to religious struggle, difficulty forgiving God and alienation from God, were associated with higher levels of depression and anxiety. However, it is important to remember that religious struggle was predictive of mortality in this study, even after controlling for depressed mood and quality of life, 2 variables that tap into dimensions of emotionality and personality. Nevertheless, the critical emotions here may have more to do with fear, anxiety, guilt, and anger and less to do with sadness and loss. The specific RCOPE items that were most predictive of mortality (wondered whether God had abandoned me; questioned God's love for me; de-

[†]*P*<.05.

[‡]*P*<.10.

[§]P<.01.

cided the devil made this happen; felt punished by God for my lack of devotion) do seem to reflect the former rather than the latter cluster of emotions.

Yet another possible explanation for the religious struggle—mortality connection is that religious struggle may result in social alienation. Expressions of dissatisfaction, confusion, and discontent with God and religion are not normative in the United States. Levels of religious struggle are, on the average, quite low. Thus, individuals who voice religious dissatisfaction and discontent in the midst of their illnesses may alienate themselves from the support and caring of family, friends, clergy, and health professionals, which may, in turn, result in a loss of social, emotional, and tangible support. In this vein, greater religious struggle at baseline was slightly but significantly correlated with less frequent church attendance (r=-0.12; P<.05).

Of course, these 3 explanations are not mutually exclusive. Several factors may account for the connection between religious struggle and mortality. Clearly, additional research is needed to examine these and other potential mediating variables. These studies should move beyond a reliance on global religious measures to a focus on more specific aspects of religiousness, positive and negative, that have the potential to enhance or diminish health and longevity.

Physicians are now being asked to take a spiritual history, ^{25,26} and more than 70 of the 126 medical schools in the United States now have courses that train students to take such a history. Our findings suggest that patients who indicate religious struggle during a spiritual history may be at particularly high risk for poor medical outcomes. Referral of these patients to clergy to help them work through these issues may ultimately improve clinical outcomes; further research is needed to determine whether interventions that reduce religious struggles might also improve medical prognosis.

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