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Chronic Medical Conditions and Wishes to Die Among Older Primary Care Patients*

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Abstract

Objective—To determine the prevalence of wishes to die and the medical correlates of wishes to die among primary care patients aged 65 years and older.

Method—Three-hundred and fifty-five adults with and without significant depressive symptoms who were screened in primary care offices and invited to participate completed a baseline in-home assessment. Participants were interviewed using standardized measures of medical conditions, functional status, and psychological status. Thoughts of death and wishes to die were assessed with standard questions from the Composite International Diagnostic Interview (CIDI) Depression Section.

Results—The weighted point prevalence of thoughts of death was 9.7% and 6.1% for the wish to die. Several medical conditions were associated with a wish to die, for example myocardial infarction (MI). In multivariate models that adjusted for potentially influential characteristics, the association between a history of MI and the wish to die remained statistically significant (odds ratio (OR) = 3.32, 95% confidence interval (CI) (1.26, 8.75).

Conclusions—Thoughts of death and a wish to die are common in older primary care patients and were more likely among persons with chronic medical conditions. Persons with a history of myocardial infarction may be particularly vulnerable to a wish to die.

Keywords

aged; comorbidity; primary health care; suicide; myocardial infarction

Introduction

Suicide is a major public health problem; in 2001, suicide ranked 11th among the leading causes of death in the United States and accounted for about 31,000 deaths [1]. Modifiable suicide risk factors include mood disorders [2], substance abuse [3], alcoholism [4], common medical illnesses [5], and lack of social ties [6], while immutable suicide risk factors include male sex and increasing age [7]. Suicide is especially of concern among older persons because suicide rates increase with advancing age and the elderly attempt suicide using more lethal means than do younger persons [8]. Multiple studies have reported that the majority of older suicide victims have visited a health care professional, such as a primary care physician, within a few months of their death and more than a third within a week [9-12]. Chronic mental and physical

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conditions associated with disability, despite their potential as risk factors, have not been the focus of many investigations in relation to suicidal thoughts and behavior. In a review of prospective studies, Harris and Barraclough calculated standardized mortality ratios for suicide in those with medical disorders [13]. They concluded that several disorders, including HIV/AIDS, Huntington's Disease, multiple sclerosis, peptic ulcer, renal disease, spinal cord injury, and systemic lupus erythematosus, were associated with an increased risk for suicide. However, most of these studies did not examine the impact of physical illnesses on suicide after adjusting for comorbid affective disorders or psychopathology using multivariate analyses. The identification of physically ill older adults at risk for suicide is important given that a majority of suicidal older adults are in active treatment with a primary care provider [14]. Hence, the primary care doctor may play a pivotal role in screening and treating suicidal individuals [15,16].

One model of the suicidal process views suicidality along a continuum, in which the epidemiology of suicidal behaviors in the elderly is described under the headings of death ideation, suicidal ideation, attempted suicide, and completed suicide. Death ideation is characterized by a recurrent wish to die and thoughts of death by passive means, while suicidal ideation denotes seriously thinking about or planning to commit suicide. Initial feelings of hopelessness and despair may lead to thoughts that life is not worth living and death ideation, which may then progress to suicidal ideation, suicide plans, attempts, and ultimately completion of the act [17]. Therefore, suicidal feelings, such as passive wishes to die and suicidal ideation, may be an important signal that the patient is at risk for suicidal behavior.

The prevalence of suicidal feelings and ideation in the elderly population ranges from less than 1% up to 17%, depending on the definitions employed by the study investigators. For example, in a population-based sample, Skoog et al. reported that in persons with no diagnosable mental disorders, 4.0% felt that life was not worth living, 27.5% had death wishes, 9.2% had thought about taking their lives, and 1.7% had seriously considered suicide within one month of interview, with higher rates among persons with mental disorders [18]. Despite the increasing frequency of suicide with advancing age, the report of suicidal ideation decreases with age [19-21]. The sensitivity and predictive value of suicidal ideation for the prediction of completed suicide is 80% and 5.6%, respectively, in geriatric psychiatric outpatients [22].

Despite the importance of the primary care sector as a venue for the initial management of mental disturbances in older adults, few previous studies have attempted to study the clinical characteristics of the older primary care patient reporting death and/or suicidal ideation. Callahan and coworkers systematically screened a large group of older primary care patients and estimated the prevalence of suicidal ideation to be 0.7 to 1.2% and found that all patients with suicidal ideation suffered from a current affective disorder and a majority had moderate to severe functional impairment [23]. Bartels and colleagues reported prevalence estimates of 27.5% for death ideation and 10.5% for suicidal ideation in older primary care patients with depression, anxiety, and at-risk alcohol abuse [24]. Although studies suggest that the effects of medical illnesses on suicide are mediated by psychological factors, physical health and functioning have been reported to be associated with death ideation independent of depression [25].

The objectives of this investigation are: 1) to determine the prevalence of thoughts of death and passive wishes to die; 2) to describe in detail the clinical characteristics and demographics of an older primary care patient sample reporting thoughts of death or passive wishes to die; and 3) to determine if specific medical conditions are associated with thoughts of death and passive wishes to die. Our study relies on an interview of older respondents who were recruited from primary care doctors' offices. We hypothesized that persons who reported medical

conditions with functional limitations or associated psychological distress would be more likely than others to endorse thoughts of death and passive wishes to die.

Methods

The Spectrum Survey

The Spectrum Survey was an observational study designed to describe subsyndromal depression. The study has been described in detail elsewhere [26,27]. In brief, primary care practices recruited from the community provided the venue for sampling older patients. Trained lay interviewers were instructed in screening and study interviews by the study investigators working with Battelle Memorial Institute's Center for Public Health Research and Evaluation, Baltimore, Maryland. Participants who agreed to be part of the study were scheduled for an in-home interview which consisted of a 90-minute survey questionnaire. Of 3,459 persons aged 65 years and older, 2,560 answered the screening questionnaire. We asked 773 to participate based on their responses to the screening interview. Patients were invited to participate with the following sampling probabilities: 1) 100% identified as depressed according to the CES-D; 2) 50% without significant depression but who were currently taking medications for sleep, pain, or an emotional problem; and 3) 10% of the remaining patients. In-home interviews were obtained for 357 people, but two persons broke off the interview before it was completed, leaving a sample of 355 persons. The mean length of time between the screening interview and the in-home interview was 1.6 weeks, with a standard deviation of 1.9 weeks. The study protocols were approved by the Institutional Review Board of the University of Pennsylvania School of Medicine. A federal Certificate of Confidentiality was obtained from the Department of Health and Human Services as an additional confidentiality safeguard for the data.

Measurement Strategy

Sociodemographic Characteristics—We used standard questions to obtain information from the respondents on age, gender, self-reported ethnicity, education, and whether the respondent lived alone.

Thoughts of Death and Wishes to Die—The Composite International Diagnostic Interview (CIDI) Depression Section is a lay-administered interview for the assessment of mental disturbances according to the International Classification of Diseases (ICD) and the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV). The standardized questions of the CIDI Depression Section are keyed to the criteria for the case definition of Major Depression [28]. The criterion for death ideation consisted of four elements: thoughts of death, wishes to die, suicidal ideation, and history of suicide attempt. In our article, we focused on thoughts of death and death ideation: “During one of those periods in the past 12 months, did you think a lot about death?” (thoughts of death question) and “Did you feel like you wanted to die?” (wishes to die question).

Psychological Status—The Centers for Epidemiologic Studies Depression (CES-D) scale was developed by the Center for Epidemiologic Studies at the National Institute of Mental Health for use in studies of depression in community samples [29-31]. The CES-D contains 20 items. The CES-D has been employed in studies of older adults [32,33]. The Beck Anxiety Inventory (BAI) was developed in order to measure the severity of anxiety symptoms [34, 35]. The BAI is a 21-item, self-report instrument designed to minimize the relationship of symptoms of anxiety and depression. Total scores range from 0 to 63. Designed to avoid confounding with depression, the BAI has been shown to be an appropriate instrument for measuring symptoms of anxiety in the elderly [36]. The Beck Hopelessness Scale (BHS) consists of 20 statements, rated by the respondent as true or false, and measures negative expectations about the future, a sense of giving up, and future anticipation or plans [37]; three

factors which Hill et al. found to be related to suicidal ideation [38]. Evidence for the construct validity of the BHS comes from studies that relate scores on the BHS to depression [39,40] and to completed suicide [41,42].

Functional Status—The Medical Outcomes Study Short Form (SF-36) has been employed in studies of outcomes of patient care [43-47] and appears to be reliable and valid even in frail elders [48]. We employed the scales representing physical functioning, role disability due to physical health problems, bodily pain, general health perceptions, social functioning, and role disability due to emotional problems [44]. The SF-36 was scored using previously described techniques [49]. The scale for each dimension ranges from 0 to 100, with higher numbers representing better health. The self-reported health item from the SF-36 “In general, would you say your health is?” was also examined separately. Participants were asked to choose among the following response categories: poor, fair, good, very good, excellent.

Medical Conditions—Medical conditions were assessed by self-report. Participants were asked if they had ever been told by a doctor that they had a heart attack, bypass surgery or angioplasty (e.g., balloon procedure), congestive heart failure, atrial fibrillation, stroke, diabetes, and cancer or leukemia assessed in separate questions for each condition. Participants were asked “Have you ever had any difficulty in controlling your water, that is, losing your urine or having trouble getting to the bathroom in time?” and “Have you had any falls in the past six months? Falling includes accidentally losing your balance and falling on the ground or falling against something like furniture.” These conditions were selected based on previous reports of association with suicide or a clinical course associated with pain or poor prognosis.

Analytic Strategy

For the analysis, the sample of 355 respondents who completed the in-home baseline assessment was divided into three groups according to their responses to the two questions on the CIDI Depression Section. In all, 44 answered yes to the thoughts of death question but no to the wishes to die question, 44 answered yes to the wishes to die question, and 267 persons answered no to both questions. Of the 44 participants who reported wishes to die, 10 also reported suicidal ideation, while 2 reported previous suicide attempts.

The analytic plan proceeded in three phases. The goal of the first phase was to estimate the prevalence of suicidal thoughts among the patients who attended the primary care practices on the days the study was underway. The stratified sampling strategy means we cannot calculate the prevalence of thoughts of death or wishes to die directly, but must account for the sampling proportions. To do so, we created sampling weights based on the inverse sampling probability

among the 2560 persons screened, calculating the prevalence as $\hat{p} = \frac{\sum_{i=1}^{355} w_i y_i}{\sum_{i=1}^{355} w_i}$ with variance

$$\widehat{Var}(p) = \frac{p(1-p) \sum_{i=1}^{355} w_i^2}{\left(\sum_{i=1}^{355} w_i \right)^2} \quad (\text{the method in Kish [50]}).$$

The second phase consisted of calculating descriptive statistics for the three groups of respondents, defined by the presence and/or absence of thoughts of death and wishes to die. Comparisons between groups of participants were made using χ^2 tests or t -tests as appropriate for categorical data or continuous data. We set α at 0.05, recognizing that tests of statistical significance are approximations that serve as aids to interpretation and inference.

The third phase consisted of carrying out multivariate analyses to examine the relationship between specific medical conditions and thoughts of death and wishes to die in persons who reported specific baseline medical conditions associated with thoughts of death and wishes to die at the $p < 0.1$ level. Our measure of association was the odds ratio. We employed separate multivariate logistic regression models to assess the relationship of medical conditions to thoughts of death and wishes to die. These multivariate models were adjusted for demographic factors (age, sex, race, education, and living alone), functional status (physical functioning, role physical, role emotional, social function, bodily pain, general health perception subscales of the SF-36), and psychological status (BHS, BAI, and CES-D scores) in a step-wise fashion; Model 2 adjusted for sociodemographic characteristics, Model 3 adjusted for sociodemographic characteristics and functioning, and Model 4 adjusted for sociodemographic characteristics, functioning, and psychological status. Data analysis was performed using SPSS version 12.

Results

Prevalence of Thoughts of Death and Suicidal Ideation

The weighted point prevalence of death ideation in the screened sample was 9.7% (95% confidence interval (CI) on the point estimate (3.8%, 15.7%)). For wishes to die, the weighted point prevalence in the screened sample was 6.1% (95% CI on the point estimate (1.3%, 10.9%)). Thus, 15.8% of the sample reported death ideation or a wish to die.

Sociodemographics and Clinical Characteristics

In Table 1 we report the sociodemographics and clinical characteristics of the 355 participants, according to the presence or absence of thoughts of death and wishes to die. The three groups (no thoughts of death/wishes to die, thoughts of death, and wishes to die) did not significantly differ with regard to age, gender, ethnicity, or education. However, the respondents who reported a wish to die were more likely to live alone than respondents who reported thoughts of death or respondents who did not report either thoughts of death or the wishes to die ($p = 0.03$). Significant differences also found among the three groups on the mean scores on four scales of the SF-36 were apparent (role physical: $p = .008$; role emotional; $p < .001$, social functioning: $p < .001$; general health perception: $p < .001$). For the role physical, role emotional, social functioning, and general health perception scales, persons who expressed a wish to die had the lowest scores, indicating the poorest functioning. The respondents who did not report either thoughts of death or the wishes to die had the highest scores, and those who reported thoughts of death fell in between. Persons who reported a wish to die also had the lowest scores on the physical functioning and bodily pain scales, but these results did not reach standard levels of statistical significance ($p = .057$ and $p = .090$, respectively).

Medical illness profiles of the three groups were also examined; significant differences among groups were seen for myocardial infarction (MI) ($p = .020$), urinary incontinence ($p = .008$), and falls in the past 6 months ($p = .013$). The prevalence of myocardial infarction and urinary incontinence was highest in the persons endorsing a wish to die and lowest in those without any thoughts of death or wishes to die. Potential group differences in psychological status were also examined. Significant differences with persons who expressed a wish to die endorsing more depressive symptoms and higher levels of hopelessness were seen for both the CES-D ($p < .001$) and BHS ($p < .001$). The group differences for the BAI scores were also significant and the mean scores of the thoughts of death and wishes to die groups were much higher than the mean scores of the no thoughts of death/wishes to die group indicating higher levels of anxiety.

Medical Conditions and Thoughts of Death and Death Ideation

The association of medical conditions and thoughts of death or death ideation was evaluated using multiple logistic regression. The following conditions were associated with thoughts of death or wishes to die: myocardial infarction, stroke, urinary incontinence, and falls within the past 6 months. The results for these analyses are presented in Tables 2 and 3. Persons who reported falls within 6 months of interview were more likely to experience thoughts of death than persons who did not (unadjusted odds ratio (OR) = 2.24, 95% CI (1.15, 4.36)). Several medical conditions were associated with a wish to die (myocardial infarction, unadjusted OR = 2.61, 95% CI (1.31, 5.19); stroke, unadjusted OR = 2.31, 95% CI (1.12, 4.79); urinary incontinence, unadjusted OR = 2.59, 95% CI (1.31, 5.10); falls, unadjusted OR = 2.04, 95% CI (1.04, 3.98)).

Additional multivariate analyses were performed that adjusted for demographics, functional status, and psychological status in a step-wise fashion. The association between persons who reported falls within the last 6 months and thoughts of death approximated but did not reach standard levels of statistical significance in the third model after adjusting for demographics and functional status (Table 2). The associations between urinary incontinence and wishes to die as well as falls within the past 6 months and wishes to die lost significance in the third model upon adjusting for demographics and functioning. The association between stroke and wishes to die also no longer achieved conventional levels of significance in the final model after adjusting for demographics, functioning, and psychological status. However, in the fourth and final model, the association between a history of MI and the wish to die remained statistically significant, and persons who reported a history of MI were more likely to have wishes to die than those who did not report a history of MI (OR = 3.32, 95% CI (1.26, 8.75)) (Table 3).

Discussion

In this community-based primary care sample, elderly persons who reported falls within 6 months of interview were more likely to experience thoughts of death than persons who did not, and several medical conditions were associated with a wish to die: MI, stroke, urinary incontinence, and falls. The association between a history of MI and the wish to die persists even after controlling for potentially influential variables. These results generally support our hypothesis that persons with medical illnesses especially medical illnesses associated with potentially serious implications are more likely to report thoughts of death or wishes to die.

Before discussing our findings, the results must first be considered in the context of some potential study limitations. First, we obtained our results only from primary care sites in Maryland whose patients may not be representative of most primary care practices. However, these practices were not academically affiliated and are probably similar to other practices in the country. Second, there is the potential for all the sources of error associated with retrospective interview data including imperfect recall and response bias (e.g., socially desirable responding). Study data are based on self-reports, and depressed persons may overestimate disability. Third, we have had to rely on patient self-reports of cardiovascular disease, diabetes, and other conditions. However, examination of patient charts is expensive and would still be prone to error because of incomplete recording of diagnoses and medications, especially if the patient receives care in more than one health system. Finally, we did not have prospective data on the presence of chronic medical conditions so we were unable to fully delineate temporal relationships between chronic medical conditions and wishes to die. Nonetheless, despite limitations, our study warrants attention because we attempted to further address the relationship between medical comorbidity and thoughts of death and wishes to die while adjusting our estimates of association for demographic factors, functional impairment, and psychopathology. In addition, because we examined a community-based primary care

sample, the results may be generalizable to older adults in primary care settings, which may help facilitate public health screening interventions and subsequent treatment in the near future.

The first aim of this study was to determine the prevalence of thoughts of death and passive wishes to die. In this study, the weighted point prevalence estimates were 9.7% for thoughts of death and 6.1% for the wish to die; this is substantially lower than Bartels and colleagues' reported prevalence estimates of 27.5% for death ideation [24] and Skoog and coworkers' reported prevalence of 27.5% for wishes to die [18]. The difference in our point prevalence estimate for thoughts of death might not be surprising considering the participants in the Bartels et al. study were a high risk group with depression, anxiety, and at-risk alcohol use. The participants in the study by Skoog et al. were part of a population based sample and therefore also differed from the participants in our primary care sample. Our results are more in line with Callahan and colleagues whose sample may have been similar to ours [23].

The second aim was to describe in detail the clinical characteristics and demographics of an older primary care patient sample reporting thoughts of death or passive wishes to die, and to determine if specific medical conditions are associated with these thoughts. Functional status and psychological factors were found to be associated with thoughts of death and wishes to die, consistent with past reports (e.g., [5,23,24]). Several medical conditions were found to be associated with thoughts of death or wishes to die, including MI, urinary incontinence, and falls in the past 6 months, whereas other medical conditions were not. There is a consensus in the literature that medical illnesses may predispose to suicide, but there is a paucity of studies that have examined the association between specific diseases and suicide. Specifically, there are few studies with primary care elders that have examined the association between the presence of physical illness and suicide, after controlling for depressive symptoms and other potentially influential covariates [51]. Our results can be compared with a psychological autopsy study in which multiple common illnesses such as urinary incontinence were demonstrated to be independently associated with an increased risk in suicide of the elderly [5].

In all, we observed three different patterns in our results. First, certain medical conditions such as falls in the past 6 months with the wish to die and urinary incontinence with thoughts of death and the wish to die did not remain significantly associated after controlling for functional status, suggesting that functional status may influence the relationship between certain medical conditions and a wish to die. Our results are consistent with previous research which has shown that functional loss accompanying urinary incontinence [52] or other chronic medical conditions [53] was associated with depression. The implication of these findings is that the presence of functional loss secondary to certain medical conditions may identify persons who should be screened for death ideation. Second, we observed that stroke and the wish to die did not reach standard levels of significance after controlling for psychological status. Taken together, these results suggest that psychological factors play a key role in the association between specific medical conditions and thoughts of death or a wish to die. In particular, psychological status may be an important part of the pathway leading a wish to die for older persons with certain medical conditions. Finally, we observed that myocardial infarction did remain significantly associated with a wish to die even after controlling for demographics, functional status, and psychological status. The reasons for our finding are not entirely clear. However, the unpredictable nature of coronary artery disease and an associated fear of a subsequent heart attack or the fear of impending death may cause thoughts of death or a wish to die. Persons with a history of myocardial infarction may be particularly vulnerable to thoughts of death or a wish to die.

The present study found that physical illness is associated with thoughts of death and the wish to die in older adults and MI is associated with the wish to die even when controlling for the

presence of mood disorders. This study suggests that primary care patients who have MI, stroke, urinary incontinence, and falls should be screened for death ideation as well as for suicide ideation for those who report a wish to die. The findings underscore the importance of developing interventions that integrate the management of mental health and physical illness in primary care [54,55]. Ultimately, the public health significance of this research is toward improved recognition and treatment of individuals who may be at risk for suicide.

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Table 1

Characteristics of Older Persons According to the Presence or Absence of Death Ideation and/or Wish to Die ($n = 355$)

	No thoughts of death/wishes to die ($n = 267$)	Thoughts of death ($n = 44$)	Wishes to die ($n = 44$)	<i>p</i> -Value
Demographics				
Age, mean (<i>SD</i>)	75.4 (5.8)	75.6 (6.4)	74.3 (6.1)	$p = .518$
Gender, female (%)	198 (74%)	34 (77%)	37 (84%)	$p = .351$
Education less than high school (%)	109 (40%)	20 (45%)	16 (36%)	$p = .686$
Ethnicity, African American (%)	95 (35%)	16 (36%)	10 (22%)	$p = .235$
Lives alone (%)	100 (37%)	11 (25%)	23 (52%)	$p = .030^*$
Functional Status				
Self-rated health, 5 = excellent/1 = poor, mean (<i>SD</i>)	2.6 (0.9)	2.2 (0.9)	2.0 (0.7)	$p < .001^*$
Physical functioning, mean (<i>SD</i>)	60.9 (29.2)	54.1 (29.2)	51.0 (27.6)	$p = .057$
Role physical, mean (<i>SD</i>)	47.4 (39.4)	34.7 (39.0)	30.1 (39.5)	$p = .008^*$
Role emotional, mean (<i>SD</i>)	82.3 (34.4)	60.6 (42.1)	41.7 (41.4)	$p < .001^*$
Social functioning, mean (<i>SD</i>)	75.15 (26.9)	61.18 (25.9)	58.8 (29.1)	$p < .001^*$
Bodily pain, mean (<i>SD</i>)	55.6 (24.9)	50.8 (21.4)	47.5 (26.2)	$p = .090$
General health perception, mean (<i>SD</i>)	54.3 (19.7)	43.6 (21.0)	38.5 (16.2)	$p < .001^*$
Medical Illnesses				
Myocardial infarction (%)	48 (18%)	9 (20%)	16 (36%)	$p = .020^*$
Angina (%)	15 (6%)	1 (2%)	8 (18%)	$p = .004^*$
Congestive heart failure (%)	29 (11%)	4 (9%)	8 (18%)	$p = .306$
Atrial fibrillation (%)	24 (10%)	5 (12%)	5 (13%)	$p = .795$
Stroke (%)	41 (15%)	8 (18%)	13 (29%)	$p = .071$
Diabetes (%)	83 (31%)	16 (36%)	15 (34%)	$p = .751$
Cancer or leukemia (%)	44 (16%)	8 (18%)	6 (13%)	$p = .819$
Urinary incontinence (%)	121 (45%)	26 (59%)	30 (68%)	$p = .008^*$
Falls (within past 6 mo.) (%)	63 (24%)	18 (41%)	17 (39%)	$p = .013^*$
Psychological Status				
Beck Anxiety Inventory, mean (<i>SD</i>)	7.2 (7.0)	14.9 (8.3)	13.9 (10.2)	$p < .001^*$
CES-D-R, mean (<i>SD</i>)	12.6 (10.1)	18.9 (12.2)	23.3 (11.9)	$p < .001^*$
Beck Hopelessness Scale, mean (<i>SD</i>)	4.0 (3.6)	5.9 (3.8)	9.2 (5.8)	$p < .001^*$

Note: Data were gathered from the Spectrum Survey, 2001-2003. *p*-Values given for comparison of groups with chi-square, *t*-test, or ANOVA, as appropriate. Percentages are column percentages.

Abbreviations: CES-D-R: Center for Epidemiological Studies Depression Scale, revised.

* $p < 0.05$.

Table 2

Association between Specific Medical Conditions and Thoughts of Death in Older Persons Who Reported Baseline Medical Conditions (OR = odds ratio. 95% confidence interval given in brackets)

	Model 1	Model 2	Model 3	Model 4
Medical condition	(unadjusted OR)	(OR adjusted for demographics)	(OR adjusted for demographic characteristics and functioning)	(adjusted for demographic characteristics, functioning, and psychological status)
Myocardial infarction	1.17 [0.53, 2.60]	1.21 [0.53, 2.71]	0.95 [0.39, 2.27]	0.99 [0.30, 2.70]
Stroke	1.23 [0.53, 2.82]	1.19 [0.51, 2.79]	1.07 [0.43, 2.70]	1.01 [0.39, 2.86]
Urinary incontinence	1.74 [0.91, 3.33]	1.67 [0.86, 3.23]	1.35 [0.66, 2.75]	0.85 [0.39, 1.86]
Falls, within past 6 months	2.24* [1.15, 4.36]	2.18* [1.11, 4.28]	1.99 [0.98, 4.03]	2.11 [0.97, 4.58]

Note: Data were gathered from the Spectrum Survey, 2001-2003. 95% CI in parentheses.

Model 1 is unadjusted.

Model 2 is adjusted for age, sex, race, education, and living alone.

Model 3 is adjusted for functional status (physical functioning, role physical, role emotional, social function, bodily pain, general health perception subscales of the SF-36), in addition to the demographic variables in Model 2.

Model 4 is adjusted for psychological status (Beck Hopelessness Scale, Beck Anxiety Inventory, and CES-D) scores, in addition to the demographic and functioning variables in Models 2 and 3.

* $p < 0.05$.

Table 3

Association between Specific Medical Conditions and Wishes to Die in Older Persons Who Reported Baseline Medical Conditions (OR = odds ratio, 95% confidence interval given in brackets)

Medical condition	Model 1 (unadjusted OR)	Model 2 (OR adjusted for demographics)	Model 3 (OR adjusted for demographic characteristics and functioning)	Model 4 (adjusted for demographic characteristics, functioning, and psychological status)
Myocardial infarction	2.61* [1.31, 5.19]	3.17* [1.52, 6.60]	2.45* [1.03, 5.85]	3.32* [1.26, 8.75]
Stroke	2.31* [1.12, 4.79]	2.82* [1.31, 6.06]	3.08* [1.23, 7.71]	2.38 [0.90, 6.29]
Urinary incontinence	2.59* [1.31, 5.10]	2.36* [1.17, 4.77]	1.88 [0.85, 4.17]	1.90 [0.81, 4.46]
Falls, within past 6 months	2.04* [1.04, 3.98]	2.20* [1.10, 4.39]	1.73 [0.79, 3.81]	1.58 [0.69, 3.63]

Note: Data were gathered from the Spectrum Survey, 2001-2003. 95% CI in parentheses.

Model 1 is unadjusted.

Model 2 is adjusted for age, sex, race, education, and living alone.

Model 3 is adjusted for functional status (physical functioning, role physical, role emotional, social function, bodily pain, general health perception subscales of the SF-36), in addition to the demographic variables in Model 2.

Model 4 is adjusted for psychological status (Beck Hopelessness Scale, Beck Anxiety Inventory, and CES-D) scores, in addition to the demographic and functioning variables in Models 2 and 3.

* $p < 0.05$.