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DEPRESSIVE SYMPTOMS IN THE FRAIL ELDERLY: PHYSICAL AND PSYCHO-SOCIAL CORRELATES*†

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ABSTRACT

The elderly who suffer from chronic illness are at unusually high risk of depression and depressive symptoms. This study was conducted to describe the prevalence of depressive symptoms in a sample of chronically-ill elders and to examine the relationship between physical illness and depression, both as it is illuminated in a regression model and as it is understood by the respondents themselves. Interviews were conducted with a random sample of 100 clients in a community-based care program for low-income elderly at risk of nursing home placement. Over one-third of the sample (36%) reported significant depressive symptoms, as measured by the CES-D. Multiple regression analysis identified functional limitations, cognitive impairment and self-perception as significant correlates of depression in a model that explained 30 percent of the variance in CES-D scores.

PREVALENCE OF DEPRESSIVE SYMPTOMS

Reported rates of depressive symptomatology among elderly living in the community range from 10 percent (Blazer, Hughes, & George, 1987) to 27 percent (Callahan, Hui, Nienaber, Musick, & Tierney, 1994; Madianos, Gournas, &

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Stefanis, 1992). Phifer and Murrell (1986) used the Center for Epidemiologic Studies-Depression Scale (CES-D) to identify the onset of symptoms in a sample of elders living in the community. Of 1,360 elders who showed no depressive symptoms during the first administration, 10.7 percent reported symptoms during the second survey conducted six months later. Ganguli, Gilby, Seaberg, and Belle (1995) studied depressive symptoms in a random sample of 1,040 rural elders. They reported that 10 percent had experienced multiple symptoms in the previous week, while 1 percent of the sample screened for major depression. Kennedy and colleagues (1989) surveyed a random sample of 2,137 seniors in a U.S. city using the CES-D. Significant depressive symptoms were reported by 17 percent of the sample. Blazer, Hughes, and George (1987) analyzed Epidemiologic Catchment Area (ECA) data from 1,300 community-dwelling elders and found depressive symptoms among 22 percent. Similar results were obtained in Athens, Greece, where Madianos, Gournas, and Stefanis (1992) reported that 27.1 percent of a community living sample reported depressive symptoms on the CES-D; with 9.5 percent of the sample clinically diagnosed as depressed.

PHYSICAL CORRELATES OF DEPRESSIVE SYMPTOMS

Physical illness is associated with higher prevalence of depressive symptoms in people of all ages. Schulberg (1992) reported that 5 percent to 10 percent of primary care patients, and 10 percent to 14 percent of medical inpatients experience major depression. Similarly, Coyne, Fechner-Bates, and Schwenk (1994) reported a prevalence of 13.5 percent for major depression and 22.6 percent for all depressive disorders among patients in primary care.

Prevalence figures observed among the physically-ill elderly have tended to be higher. Lindesay and Thompson (1993), used a screening instrument called the CARE schedule to examine depression among 890 elders in London. They found a prevalence of 19.4 percent for depressive disorders in a subsample of housebound elders. This rate is consistent with a 1986 study of depressive symptoms and physical illness among the elderly reported by Lisa Berkman and colleagues (Berkman et al., 1986). Using the CES-D, these authors reported depressive symptomatology among 13.5 percent of elders with major functional disabilities, and among 19.7 percent of those with one or more chronic physical conditions. Callahan and colleagues (1994) surveyed 1,711 primary care patients aged sixty and over and found 27 percent reported significant symptoms on the CES-D at either baseline or nine-month follow-up interviews. Finally, Davidson, Feldman, and Crawford (1994) reported that 52.8 percent of their sample of 404 disabled and frail elderly scored at or above the cut-off point on the CES-D.

As Aneshensel, Frerichs, and Huba (1984) documented so clearly, there appears to be a cyclical relationship between depression and physical illness. Illness increases risk for depression and depression (often subsequently) exacerbates the illness. Depression can seriously impair a patient's capacity to cope with or recover from physical illness. Depressive symptoms have been associated with reduced immune functioning (Andreoli et al., 1993; Levy et al., 1991; Maes et al., 1992; Zisook et al., 1994), increased risk of re-hospitalization and service utilization (Saravay et al., 1996; Colenda, Trinkle, Hamer, & Jones, 1991; Howland, 1993), and higher mortality following a myocardial infarction (Frasure-Smith, Lesperance, & Talajic, 1995). Reynolds, Small, Stein, and Teri (1994) suggested that depression worsens the prognosis for medical conditions such as stroke and cardiovascular disease, as well as ability to cope with everyday situations and stressors.

Studies of the relationship between illness and depression have emphasized the mediating effects of physical factors such as pain and functional limitations. In an exhaustive review of literature from 1975 through mid-1990, Smith (1992) suggested pain as a possible mediator. He observed that chronic pain often is associated with high prevalence of depressive disorders, that patients with major depression often include pain as a major complaint, and that treatment of depression often reduces pain. Others have noted that the functional impairment associated with physical illness increases depressive symptoms (Burnett & Mui, 1994; George, 1993; Phifer & Murrell, 1986). In their 1992 study of 228 elderly patients in outpatient clinics, Williamson and Schulz found that functional limitations were more important than pain in contributing to depression.

PSYCHOSOCIAL CORRELATES OF DEPRESSIVE SYMPTOMS

While physical factors are undoubtedly important, psychosocial measures may also mediate the relationship between physical illness and depression. These measures include the cognitive and interpersonal response of an individual and his or her support system to the illness. They also include cognitive and emotional manifestations of physical illness, such as cognitive impairment. Specific constructs used in this study include three cognitive attributes: locus of control, self-definition, and cognitive impairment; and one social attribute, support received from family and friends. These factors have emerged as significant predictors in previous studies, described below.

COGNITIVE CORRELATES

Locus of Control

An individual's attribution style, or "locus of control" may affect vulnerability to depression. Hoffart and Torgersen (1992) and Haber (1994) suggested that a tendency to externalize to chance may contribute to the risk of depression. Hoffart and Torgersen (1991) reported that relatives of depressed patients attributed bad events to external causes more often than relatives of dysthymic patients. These authors suggest the presence of "depressogenic" causal attributions. That is, individuals who attribute health events to external causes may be at higher risk for depression. Conversely, those who believe they control major health events would be at lower risk for depressive symptoms (Haber, 1994).

Self-Definition

Labeling theory would suggest that acceptance of a stigmatized label may increase the likelihood of behavior and attitudes that are compatible with the label. While most work in this field has emphasized deviant behavior, two studies have examined this phenomenon among the elderly. Mathews (1979) examined strategies older women used to preserve a positive sense of self. Among them were tactics for avoiding the label, "old," which was seen by respondents as deeply discrediting. Similarly, Barusch (1997) examined low-income women's willingness to label themselves as "old" or "poor." Commenting on respondents' unwillingness to accept these labels, this author suggested that the rejection of negative labels may be adaptive. So, for example, a frail individual who perceives him or herself as "sick" may hold a more negative self-perception and so be at higher risk for depression.

Cognitive Impairment

Cognitive impairment is widely recognized as a feature of depression, particularly among the elderly (Beats, 1996; Beats, Sahakian, & Levy, 1996; Mitchell & Dening, 1996). Indeed, the frequency with which cognitive impairment accompanies depression has led some (Beats, 1996; Mitchell, 1995; Van-Ojen & Van-Tilburg, 1995) to suggest that these conditions share a common organic cause. Under this view, a physical condition that causes cerebral deterioration may produce both cognitive impairment and depression. Alternatively, the cognitive decline associated with organic deterioration may trigger depressive symptoms. Because few studies in this area have used longitudinal methods, it is difficult to determine the chain of causality, but it is clear that any study of the relationship between physical illness and depression must include measures of cognitive decline.

SOCIAL CORRELATES

The extent to which an individual can secure assistance from family and friends to assist in coping with illness may also influence the risk of depression. The role of social support in buffering the effects of stress is widely acknowledged, and studies conducted throughout the world have documented an association between low social support and higher rates of depression (Bazargan & Hamm-Baugh, 1995; Chu, I., 1995; Lamb, 1996; Lee, Crittenden, & Yu, 1996; Steffens et al., 1996).

Within the significant body of research on depression few studies have examined the role of psychosocial measures in mediating the relationship between physical illness and depression. Fewer still have explored comorbidity from the perspective of the people affected. This study was conducted to describe the prevalence of depressive symptoms among chronically-ill elders and to identify correlates of these symptoms that might illuminate the relationship between chronic physical illness and depression.

METHOD

Sample

Selection and Recruiting

Participants for this study were randomly selected from clients of The Alternatives Program (TAP) in Salt Lake County. TAP provides services such as adult day care and homemakers to low-income adults whose physicians certify that they are at risk of nursing home placement. Of the 182 TAP clients contacted, 100 (55%) were interviewed, of whom 87 (87%) were women. Program staff provided access to demographic information on non-participants, and independent *t*-tests and chi-square analyses were conducted to identify differences in age, race, gender, income, and living status (whether or not the respondent lived alone) between participants and nonparticipants. This analysis yielded significant differences in age ($t = 2.42$, $p = .017$). Older TAP clients refused to participate in the study more frequently. There were no significant differences on other variables. The most common reason for non-participation, given by 43 percent of those who declined, related to poor health and cognitive difficulties. Others (26%) indicated they just did not want to be interviewed, while the remainder cited other reasons.

Participant Characteristics

Participants in this study were predominantly white (94%). Their mean age was 78, with a range from 60 to 101 years. The median monthly income was $575, with a range from $257 to $1,584 per month. The vast majority (91%) were either widowed (53%) or divorced (28%). Most (69%) lived alone. The modal level of education was high school (34%).

Data Collection

Interviews

Trained undergraduate and masters students conducted in-depth interviews in respondents' homes. Interviews lasted one to three hours. When participants became fatigued, interviewers completed the interview in a second session.

While most of the protocol was highly structured, interviews closed with a "guided conversation" designed to explore respondents' understanding of the impact of physical illness on their lives and emotional well-being.

Instruments

A general demographic section recorded age, gender, race, religion, education, marital status, participant's occupation, spouse's occupation, primary diagnosis, length of residency in home, alcohol and prescription drug use, home ownership, and living arrangement. Table 1 summarizes the instruments used to measure physical health correlates as well as psychosocial constructs.

Physical Health Measures

Three physical health measures were used to gauge perceived health status, perceived pain, and functional ability. The Medical Outcomes Study (MOS) Short Form General Health Survey (Stewart, Hays, & Ware, 1988) was used to measure perceived health status and pain. This survey is a twenty-item instrument adapted from health insurance surveys that assesses participants' level of physical, mental, and social health. It has been normed on large patient samples, with an age range of 18 to 103, across the United States. Respondents rate their physical health on a scale from 1 (Excellent) to 5 (Poor) and amount of bodily pain experienced in the previous four weeks on a scale from 1 (None) to 5 (Severe). Functional ability was measured using the Index of Activities of Daily Living (ADL) (Katz, Ford, Moskowitz, Jackson, & Jaffee, 1963). This widely

Table 1. Instruments

Construct	Variables	Inventory	Number of Items
Physical Health	Perceived health status	Medical Outcome Study	1 (5-point Likert scale)
	Perceived pain	Medical Outcome Study	1 (5-point Likert scale)
	Functional ability	Index of Activities of Daily Living	8 (yes, no)
Psycho-Social Measures			
Cognitive	Locus of control	Internal Health Locus of Control Scale	6 (4-point Likert scale)
	Cognitive impairment	Mini Mental State Examination	11 (scales vary)
	Self-definition	Guided Conversation	1 (yes, no)
Social	Support	Iowa Self-Assessment Inventory	8 (4-point Likert scale)
Depression	Symptoms	CES-D	20 (4-point Likert scale)

used measure assesses a person's ability to carry out daily tasks such as walking, getting out of bed, climbing stairs, grooming, bathing, dressing, toileting, and feeding. Items are rated "yes" or "no" in terms of dependence or independence for each activity. This index has shown good inter-rater reliability, as well as strong correlations with measures of mobility and house confinement (Kane & Kane, 1981).

Psychosocial Measures

Cognitive constructs were measured using three scales. *Locus of control* was gauged using a subscale from the Multidimensional Health Locus of Control Scale (MHLC) (Wallston, Wallston, & DeVellis, 1978), called the internal health locus of control (IHLC) scale. Typical questions include: "No matter what I do, if I am going to get sick, I will get sick" and "Most things that affect my health happen to me by accident." Respondents answer using a 4-point, Likert-type scale (1 = strongly disagree and 4 = strongly agree), with answers summed to generate a global score. Higher scores indicate more external locus of control.

Cognitive impairment was measured through the Mini Mental State Examination (Folstein, Folstein, & McHugh, 1975). This examination requires participants to answer eleven questions that test orientation, recall, attention, calculation, ability to copy a figure, and ability to follow verbal and written commands. Participants receive a score from 1 to 5 on each task for 30 possible points. A score of 21 or less indicates probable dementia or delirium. Elders who show few signs of dementia score an average of 27.6 (Gallo, Reichel, & Andersen, 1988).

Self-definition as "sick" was measured through response to a single question included in the Guided Conversation described below. The question was, "Do you consider yourself a sick person?" Responses were coded in a dichotomous measure (1 = yes; 0 = no).

Social support was measured using the eight-item social support subscale from the Iowa Self-Assessment Inventory (Morris & Buckwalter, 1988). This scale measures instrumental and emotional assistance received from family and friends. Items are rated on a scale from 1 (usually or always true) to 4 (usually or always false). The scores for each item are summed to comprise a score that ranges from 8 to 32. This inventory is valuable as it has been normed on adults aged sixty-five years and older (Morris, Buckwalter, Cleary, Gilmer, & Andrews, 1992). Reliability coefficients for the subscales range from .74 to .86 (Morris, Buckwalter, Cleary, Gilmer, Hatz, & Studer, 1990). The reliability coefficient (Cronbach's alpha) for this scale in our study was .76.

Depressive Symptom Measurement

The Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) was used as the dependent measure in this study. The CES-D is widely used as a screening tool to gauge the frequency of depressive symptoms in the preceding week. Each symptom is accompanied by a 4-point scale (0 = less than 1 day to 3 = 5 to 7 days). The potential range of scores is from 0 to 60 in which higher scores indicate greater levels of depression. A score of 16 is generally used as a cutoff score, indicating high levels of depressive symptoms (Orme, Reis, & Herz, 1986).

Most studies of the structure of the CES-D have identified four subscales: somatic activity, depressive affect, interpersonal, and positive affect (Davidson et al., 1994; Radloff, 1977; Sheehan, Fifield, Reisine, & Tennen, 1995). There has been some concern that the somatic subscale may cause the CES-D to over-estimate the prevalence of depression among the frail elderly. In 1994, Davidson and colleagues examined this question, using data from 404 frail and disabled elders. They concluded that the CES-D "is an appropriate tool to measure depressive symptoms in frail elderly" (p. 159). In this study the reliability coefficient obtained with the CES-D (Cronbach's alpha) was .81.

Guided Conversation

At the end of each interview, respondents were asked four questions as part of a guided conversation designed to explore their understanding of the trajectory and impact of physical illness. First they were asked to describe their diagnosis and discuss the duration and pattern of the illness. Then they were asked what they felt had caused the illness and whether or not it could have been prevented. The third topic explored how the illness had affected their lives. Finally they were asked whether or not they considered themselves "sick." Responses were noted by the interviewers. Although most respondents did allow taping of their remarks, transcripts were not generated for this study. Instead, a review of interviewers' records indicated they were sufficiently detailed for this analysis.

Data Analysis

Descriptive measures were used to assess the prevalence of depressive symptoms in this sample. Global scores on the CES-D were calculated, and the proportion reporting each symptom was recorded.

Multiple regression analysis was employed to determine which constructs were associated with depressive symptoms. In addition to physical constructs (pain, perceived health, and functional limitations), psychosocial constructs (cognitive limitations, social support, internal health locus of control, and self-definition as "sick") were entered. The dependent variable was depressive symptoms, as measured by the CES-D.

Frequencies were generated for all variables to assess distributions and outlying cases. None of the variables was significantly skewed, and no outliers were identified. For the regression analysis, diagnostics were performed to ensure multivariate assumptions were met. Bivariate correlation matrices, variance inflation factor (VIF) values, and tolerance criteria indicated no multicollinearity among the independent variables.

Data from the guided conversation were thematically coded (Miles & Huberman, 1984). Seven themes were identified in respondents' descriptions of the impact of illness on their lives: limitations (in lifestyle or activities); emotional impacts (regrets, anger, self-blame, pain); lessons learned (about self, others, physical care, and coping); global change (in self); coping strategies; religion, and little or no impact. This coding scheme was subjected to an inter-rater reliability check. It was amended until acceptable reliability (85% agreement) was achieved.

Responses to the question about whether or not the respondent considered him/herself "sick" were coded as yes, no, and unsure, with reasons noted and thematically coded. Six themes were identified: simple denial or refusal, focusing on remaining capabilities, comparison with others who were worse off, substitution of "disabled" or "handicapped" for "sick," no reason given, and other responses.

RESULTS

Descriptive Measures

Descriptive measures of factors included in the regression analysis are presented in Table 2.

Physical

Three physical measures were included in this analysis: ADL scores, perceived physical health, and pain. Respondents were frail, needing assistance with an average of 2.6 Activities of Daily Living (ADL's) and 5.3 Instrumental Activities of Daily Living (IADLs). Most perceived their health as "fair" (38%) to "good (25%). Most of the sample reported that the pain they experienced recently was moderate (38%) to severe (33%).

Cognitive

Cognitive measures used here included the mini mental state examination, the internal health locus of control, and self-perception as "sick." Few of the respondents in this study reported significant cognitive impairment. The mean score on the mini mental state exam was 25.8, with a range from 13 to 30. Folstein, Folstein, and McHugh (1975), suggest using a criterion of twenty-one or less to gauge cognitive impairment. Using this cut-off, only 14 percent of respondents showed significant cognitive impairment.

Participants showed a clear tendency toward external causal attributions. Their mean score on the Internal Locus of Control subscale was 5.6, with a range from 2 to 8. The mean score on external ("powerful others") subscale was 14.8, with

Table 2. Descriptive Measures

Interval Measures	*N*	Mean	Median	*SD*	Range
Activities of Daily Living	100	2.62	3.00	1.82	0-8
Mini Mental State Examination	100	25.8	27.0	3.75	13-30
Internal Health Locus of Control	99	5.6	6.0	1.40	2-8
Social Support	100	27.3	29.0	5.40	10-32
CES-D	100	14.1	12.0	9.17	0-47

Categorical Measures	*N*	Category	Valid Percent
Perceived Health Status	100	Excellent	6
		Very good	13
		Good	25
		Fair	38
		Poor	18
Pain	99	None	9
		Very mild	10
		Mild	9
		Moderate	38
		Severe	33
Self-definition "sick"	100	Yes	15
		No	85
Why not?	85	Refusal/Denies	34
		Remaining abilities	12
		Compared to others	10
		Not sick, disabled	8
		No reason	10
		Other	25

a range from 6 to 24. Respondents' mean on the chance subscale was 12.3, with a range from 6 to 19. Mean scores obtained when this instrument was normed were 25.1 on the Internal Locus of Control subscale; 19.9 on the Powerful Others subscale, and 15.6 on the chance subscale (Wallston, Wallston, & DeVellis, 1978).

Most respondents (85%) did not see themselves as sick. The most common rationale, given by 34 percent of the group, was simple rejection of the label. For example, one seventy-six-year-old woman said, "No, I have problems, but I've learned to handle them . . . [I'm] not a sick person. I know I've got problems." Another seventy-six-year-old said, "I refuse to admit to anyone that

I'm sick. . . ." The second most common response, given by 12 percent of the sample, was to emphasize remaining capabilities. Respondents using this response indicated they weren't "sick" because they could still do some things. As one respondent said, "No! A sick person can't do anything. I can plan meals, cook, and do laundry." Still others (10%) found that compared to others they weren't really sick. "My back and legs kill me, but there's a lot of people worse off than me so I don't feel sick." A few (8%) considered themselves not sick, but disabled or handicapped. Notably, those who considered themselves sick reported significantly higher scores on the CES-D (mean = 18.4) than those who did not (mean = 12.56, $t = 2.50$, one-tailed $p < .05$) (see Table 2).

Prevalence of Depressive Symptoms

Findings from the CES-D were used to describe the prevalence of depressive symptoms in this sample. The mean score on the depression scale was 14, slightly below the cutoff score (16) for clinical depression recommended by Radloff (1977). Scores on the CES-D ranged from 0 to 47, with 36 percent of participants reporting significant symptoms.

Examination of individual items suggests that those most frequently reported emphasized well-being. The vast majority (91%) felt that they were "just as good as other people" most or all of the time. Similarly, a majority of the sample were "happy" and "enjoyed life" most or all of the time.

Among the negative symptoms, somatic problems were most common. Nearly half (48%) of this sample found that everything they did "was an effort." A comparable proportion (45%) simply "could not get going" most or all of the time. The third most common somatic complaint was restless sleep, reported by 32 percent of the group. Symptoms reported least frequently were primarily interpersonal. Only 5 percent of the group reported feeling that people "were unfriendly" or disliked them most or all of the time. Table 3 summarizes these findings.

Correlates of Depressive Symptoms

Multiple regression analysis was used to estimate a model predicting depressive symptoms. The model explained 30 percent of the variance in CES-D scores, with three measures emerging as significant correlates: functional limitations, self-definition as "sick," and cognitive impairment. Social support, locus of control, perceived physical health, and pain did not emerge as statistically significant correlates of depressive symptoms.

With a beta of .32 ($p = .001$), functional limitations emerged as the most powerful correlate. Greater dependence was associated with more depressive symptoms. Second most significant was cognitive impairment. Here a beta of .25 ($p = .01$) indicated that higher levels of impairment were associated with more symptoms. Finally, self-definition as "sick" emerged as a significant correlate.

Table 3. Prevalence of Depressive Symptoms (*N* = 100)

	Level*			
Variable	0	1	2	3
Somatic Problems (Subscale Mean = 6.42; *SD* = 4.4; α = .67)				
1. I was bothered by things that usually don't bother me.	73	13	5	9
2. I didn't feel like eating; my appetite was poor.	60	17	6	17
5. I had trouble keeping my mind on what I was doing.	57	26	10	7
7. I felt that everything I did was an effort.	36	16	16	32
10. I felt fearful.	74	17	7	2
11. My sleep was restless.	42	26	5	27
20. I could not get going.	33	22	22	23
Negative Affect (Subscale Mean = 3.2; *SD* = 3.6; α = 81)				
3. I felt that I couldn't shake off the blues even with help from my family and friends.	79	13	2	6
6. I felt depressed.	55	23	13	9
14. I felt lonely.	49	26	12	13
17. I had crying spells.	81	8	6	5
18. I felt sad.	58	17	16	9
Interpersonal (Subscale Mean = 1.3; *SD* = 1.6; α = .27)				
9. I thought my life had been a failure.	77	11	9	3
13. It seemed I talked less than usual.	63	20	9	8
15. People were unfriendly.	92	3	2	3
19. I felt people disliked me.	94	3	1	2
Well-being (Subscale Mean = 3.5; SD = 2.7; α = .51)				
4. I felt I was just as good as other people.	4	5	12	79
8. I felt hopeful about the future.	31	17	16	36
12. I was happy.	10	17	22	51
16. I enjoyed life.	18	13	18	51

*Indicates frequency during the week prior to the interview: 0 = Never (less than one day); 1 = Seldom (1-2 days); 2 = Most of the time (3-4 days); 3 = All, or nearly all, of the time (5-7 days).

The beta for this measure was .23 (p = .02), indicating that those who described themselves as "sick" had higher levels of depressive symptoms. Table 4 displays the results of this analysis.

Impact of Illness

When respondents were asked about the impact of illness on their lives their primary responses did not emphasize depression or emotional distress. Instead, most (59%) emphasized limitations on their activities and capabilities. A typical response came from one seventy-five year old who said her illness had ". . . slowed me down to a snail's pace. . . ." Another respondent said she found her life "very restricting. I can't walk around and must stay in one room."

The second most common response related to lessons learned from chronic illness. Of those mentioning this theme, a significant subgroup emphasized learning to cope with cognitions and emotions. For example, a seventy-one-year-old paraplegic said she learned that she can "deal with everything by having a positive attitude. . . ." Some learned lessons about relating to other people: ". . . not to criticize people and not to be critical in any attitudes. Try to be nice to people and hope others return the favor" or ". . . not to talk about arthritis to others because people get sick of it." Another subgroup emphasized lessons that clarified values or priorities. One eighty-three-year-old woman said she had learned "to see what is of value and importance and what things are secondary and what things to let go of. . . ." A few reported that their illnesses had changed them completely. For example, one seventy-eight-year-old woman said "People that have death staring them in the face are not afraid of anything and are willing to take a risk. I'm not afraid of anything."

Table 4. Correlates of Depressive Symptoms
$R^2 = .30; R = .54$
$F = 5.10, p < .001$

Measure	Beta	t	p
Physical Factors			
Activities of Daily Living	.32	3.34	.001
Perceived Physical Health	–.18	–1.60	.113
Pain	.02	.21	.835
Psycho-Social Factors			
Cognitive Impairment	.25	2.53	.013
Self-Definition ("sick")	.23	2.36	.020
Social Support	–.02	–.15	.878
Internal Locus of Control	–.00	–.02	.985

A small but important minority of eleven respondents mentioned that their illness had caused them emotional pain. Three mentioned regrets and anger, and five emphasized self-blame. One of the most compelling responses came from a seventy-five-year-old woman who said of her illness, "[It] made me so I don't really care if I wake up or not."

DISCUSSION

Two significant limitations dictate caution in interpreting the results of this study. The sample was randomly drawn from a group of frail seniors receiving services through a public agency so results may not generalize to the population not receiving services. Further, the cross-sectional nature of this design precludes confident discussion of causality. Factors identified in this study are associated with, but may not precede or cause, the symptoms reported.

With these caveats in mind, results of the study offer intriguing insights, with both practical and theoretical significance. The practice significance of the findings lies in their potential to assist professionals charged with developing and operating programs that address the mental health needs of physically ill elders. Their theoretical significance stems from the important role of self-perception in determining risk of depression in an extremely vulnerable population.

The prevalence of depressive symptoms observed in this sample (36%) is high compared to the general population of seniors, but similar to that observed by Berkman and colleagues (1986). Almost a third of their sample of people with functional disability and chronic conditions scored at or above 16 on the CES-D. This similarity suggests a measure of confidence in using this figure to estimate the prevalence of depressive symptoms among clients in community-based programs serving the frail elderly.

Functional limitations emerged as central in this analysis. They were significant, both in the predictive model and in respondents' open-ended descriptions of the impact of illness. As in previous studies (Phifer & Murrell, 1986), participants in this sample who were more functionally impaired reported significantly more depressive symptoms. This supports the contention advanced by Williamson and Schulz (1992) that functional limitations are more important than pain in mediating the relationship between illness and depression. Further support came from the results of our guided conversations. The response most often given when participants were asked how illness had affected their lives related to functional limitations. Clearly professional and technological interventions that minimize functional limitation will have a secondary benefit in the improved mental health of frail elders.

Cognitive impairment was also an important correlate of depressive symptoms in this study. Like previous studies, this one does not enable us to distinguish whether cognitive decline causes depressive symptoms or a single (possibly organic) factor causes both. Indeed, the causal chain may be even more complicated in some cases, since some studies have attributed severe cognitive impairment to the use of tricyclic antidepressants (Oxman, 1996). Clearly this question merits further consideration.

One of the most intriguing findings of this analysis was the relationship between self-perception and depression. Most studies of this relationship have used perceived health status, and interpreted the results as illuminating the close relationship between physical illness and depression (i.e., Gerety & Farnett, 1995; Henderson et al., 1993; Kamholz & Gottlieb, 1990). But in this study the simple question, "Do you consider yourself a sick person?" was more significantly associated with depression than perceived health status and emerged as significant even when more objective measures of illness (pain and ADL limitations) were controlled. This suggests that the association between perceived health status and depression may hinge more on self-perception than on physical health.

The role of self-perception in the comorbidity of physical illness and depression is not widely acknowledged. Bazargan and Hamm-Baugh (1995) reported that positive self-perception was negatively related to depressive symptoms in a large sample of African-American elders. Other studies have described a relationship between depression and self-esteem. Self-perception, whether measured as "perceived health status" or as "self-definition as 'sick'," may be a proxy for self-esteem. Results of this study suggest that this construct, alternatively described as positive self-perception, high self-esteem, or positive self-image, may exert an independent effect on a frail elderly person's risk of depression. A respondent who insists (sometimes despite evidence to the contrary) that she is not "sick" may be applying a well-established strategy for maintaining self-esteem and warding off depression.

In summary, the results of this study support an estimate that roughly one-third of physically frail elders experience significant depressive symptoms. The regression model estimated here, which explained 30 percent of the variance in CES-D scores, identified functional limitations, cognitive impairment, and self-perception as important correlates of depressive symptoms. Findings highlight the importance of self-perception in an elder's experience of depression, but leave to future research the question of whether self-perception contributes to or results from depressive symptoms.

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