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Physicians' Detection of Late-Life Depression: The Roles of Dysphoria and Cognitive Impairment

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Abstract

OBJECTIVE—To examine factors that impede or facilitate physicians' detection of depression in later life, including cognitive impairment and patients' endorsement of dysphoria.

METHODS—A population-based sample of 344 adults from the Swedish Adoption/Twin Study of Aging (SATSA) was utilized. Physician detection of depression was determined by (1) outpatient medical records, (2) antidepressant prescription, and/or (3) inpatient hospitalization. Depressive symptoms were measured by highest score on the Center for Epidemiologic Studies-Depression Scale (CES-D), administered on 6 occasions between 1986 and 1994. Endorsement of dysphoria was examined using two items on the CES-D. The Mini-Mental State Examination (MMSE) was used to indicate cognitive impairment.

RESULTS—One-hundred thirty-six individuals were above the cut-off on the CES-D on at least one occasion; however, only 14 of these individuals (10%) were detected as depressed by a physician. Higher CES-D total score was significantly related to physician detection. Furthermore, physicians were most likely to detect depression if the individual endorsed the single CES-D item regarding feeling depressed. A significant interaction was found, such that overall CES-D score was only associated with physician detection among those with higher endorsement of the depressed item. The association between total CES-D and physician detection was not affected by presence of cognitive impairment.

CONCLUSIONS—Depression in later life often goes undetected by physicians. Factors associated with detection include the frequency/severity of symptoms and patients' endorsement specifically of feeling depressed. Results suggest that physicians should routinely assess for other symptoms associated with late-life depression besides dysphoria (e.g., appetite loss, crying spells).

Keywords

late-life depression; physician detection; dysphoria; cognitive impairment

Major depression in later life is associated with decreased cognitive functioning, increased social and functional impairment, and increased risk of all-cause mortality (Blazer, 2003). Even subsyndromal levels of depressive symptoms are associated with similar negative health outcomes (Lavretsky, Kurbanyan, & Kumar, 2004). Moreover, an estimated 85% of older adult suicide decedents have a depressive illness at the time of death (Conwell &

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Brent, 1996). Thus, accurate assessment of depression in older adults is a critical public health issue.

Many studies have shown that major depression is underdiagnosed in primary care, which is the most frequent point of contact between older adults and the health care system (Cepoiu et al., 2008; Harmon, Veazie, & Lyness, 2006). Mitchell, Vaze, and Rao (2009) conducted a meta-analysis examining the clinical diagnosis of depression in primary care settings utilizing 50,371 patients across 41 studies. They found that general practitioners correctly identified depression in only 47.3% of cases. Results stratified by age suggest that physicians are even less successful in identifying depression in older adults compared to younger individuals (Mitchell, Vaze, & Rao, 2010). Additionally, Simon and Von Korff (1995) found that only 29% of patients with sub-threshold depression were accurately assessed by their primary care physician. These results are important because cases of late-life depression that go undetected in primary care settings have poorer prognosis than those that are detected (Licht-Strunk et al., 2009). Thus, the identification of factors that may impede or facilitate physician recognition of late-life depression is crucial.

A few patient factors have been identified that contribute to a physician's ability to detect late-life depression. For instance, physicians may be more likely to detect depression when symptoms are more severe (Coyne, Schwenk, & Fechner-Banks, 1995; Garrard et al., 1998). This finding may help to explain low levels of physician detection of depression in later life, as older adults are more likely than other age groups to experience subsyndromal levels of depression (Fiske, Wetherell, & Gatz, 2009).

The differential presentation of late-life depression is another factor that may affect the likelihood of physician detection. Older adults are more likely than younger adults to present with non-dysphoric depression (Gallo et al., 1994; Newmann et al., 1991). Specifically, older individuals are less likely to endorse depressed mood or sadness, and more likely to endorse somatic symptoms (e.g., appetite disturbance) compared to younger age groups (Hybels, Landerman, & Blazer, 2012). Little research has been conducted to determine whether physicians privilege certain symptoms when assessing depression. At least one recent study found that physicians were less likely to recognize depression in patients presenting with physical complaints and pain compared to patients whose chief complaints were psychological (Menchetti et al., 2009). These findings provide evidence that symptom presentation is an important factor in the accurate detection of depression. However, few studies have examined this topic among older adults and virtually none has examined the effect of patients' endorsement of dysphoria on physician detection.

Cognitive impairment represents another potential, yet under-studied, barrier to accurate detection of late-life depression. It is often difficult to distinguish between cognitive impairment and symptoms of depression (Wright & Persad, 2007), which may lead to over- or under-detection of late-life depression. Cognitive impairment also may affect symptom presentation. Individuals with dementia of the Alzheimer's type are more likely to experience co-morbid subsyndromal levels of depression with chief symptoms of irritability and social withdrawal (Olin et al., 2002). Stroke victims and individuals with vascular dementia are more likely to exhibit co-morbid vegetative symptoms of depression (i.e., weight loss, fatigue) than symptoms of dysphoria or sadness (Paradiso et al., 2008; Park et al., 2007).

The current study sought to examine dysphoria and cognitive impairment as moderators of physicians' detection of late-life depression. Based on prior research, it was hypothesized that greater overall level of depressive symptoms would be associated with a higher level of physician detection of late-life depression (Cepoui et al., 2007). Furthermore, it was

hypothesized that physicians would be more likely to detect depression in later life if the patient endorsed symptoms of dysphoria and that endorsement of dysphoria would be a moderator of symptom severity. In other words, we predicted greater under-recognition of depression when symptoms were less severe or when dysphoria was not endorsed. Finally, cognitive impairment was hypothesized to interfere with physician detection of depression in late life.

Methods

Participants

Participants for the current study were obtained from the population-based Swedish Adoption/Twin Study of Aging (SATSA; Pedersen, Plomin, Nesselroade, & McClearn, 1992). SATSA data collection began with a comprehensive questionnaire in 1984 and subsequent questionnaires administered at three year intervals, with the Center for Epidemiologic Studies-Depression Scale (CES-D; Radloff, 1977) included in 1987, 1990, and 1993. Additionally, a subset of participants was recruited to participate in a more comprehensive in-person testing, including the Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) and the CES-D, beginning in 1985 and continuing on a three year rolling schedule, with interviews in 1986–1988, 1989–1991, and 1992–1994 corresponding to the questionnaire timepoints included in the present analyses. In order to be included in in-person testing, participants had to meet the following criteria: (1) both members of the twin pair must have responded to the first mailed questionnaire, (2) both members had to be alive at the time of the in-person testing, and (3) twins were over the age of 50 when tested. Outpatient medical records were coded for 476 individuals who participated in the in-person testing. Of this subset, 344 were aged 50 years or older at the time of the first CES-D questionnaire in 1987. Because the current study focuses on detection of depression in later life, only participants aged 50 and older at the time of this survey were included. The final sample for the present study was 344, including 138 men (40.1%) and 206 women (59.9%). The average age of participants at the time of first CES-D questionnaire was 61.2 (SD = 7.4).

Measures

Physician Detection of Depression—Three sources of information were utilized to determine whether physicians detected depression in the study participants. First, outpatient medical records for the period from 1986 to 1994 were coded by a project physician according to the ICD-10 diagnostic rubric. Relevant diagnoses for depression included ICD-10 codes F30-F34. Second, medication status and antidepressant use were assessed at each in-person testing session between 1986 and 1994. Self-reported medications were coded into the Anatomical Therapeutic Chemical (ATC) classification system and all drugs with the ATC code N06A were classified as antidepressant medications. Finally, data from the national Inpatient Discharge Registry were examined to discern whether anyone had been hospitalized with an ICD-10 diagnosis of depression between 1986 and 1994. An individual in the current project was considered detected by a physician if, at any time between 1986 and 1994, he or she had an outpatient diagnosis of depression (n=14; 4.1%), was prescribed an antidepressant medication (n=6; 1.7%), or had an inpatient diagnosis of depression (n=1; 0.3%). Overall, 19 out of 344 participants (5.5%) were considered to be identified by a physician as having depression; most were detected by only one of these sources. Of those who were detected, 6 were men and 13 were women.

Depressive Symptoms—Depressive symptoms were assessed by the CES-D, a twenty-item measure that asks about frequency of symptoms in the past week using a four-point Likert-type scale. The CES-D has demonstrated good internal consistency, test-retest

reliability, and validity (Radloff, 1977), and has been shown to have measurement equivalence across the lifespan (Gatz, Johansson, Pederson, Berg, & Reynolds, 1993). For the SATSA project, items were translated into Swedish and back-translated by another individual to ensure that the original meanings were retained. Factor analyses have demonstrated that the Swedish CES-D is comparable to the original version of the measure (Gatz et al., 1993). A cut-off score of 16 has been shown to discriminate between depressed inpatients and community-dwelling adults (Radloff, 1977).

There were six times of measurement: three questionnaires and three in-person interviews. Correlations between the CES-D at various time points ranged from .57–.74 (all p's<.001), which corroborates prior findings that CES-D scores are relatively stable over time (Fiske, Gatz, & Pedersen, 2003). In order to discern the participant's greatest likelihood of endorsing depressive symptoms to his or her physician, the individual's highest CES-D score at any time point was utilized.

Dysphoria—Endorsement of dysphoria was determined using two items selected from the CES-D based on face validity: "I felt depressed" and "I felt sad." As with the full scale CES-D, participants' highest item endorsement of any time point was used as a proxy of their revealing particular symptoms to physicians. Participants' ratings of the two items were combined into a single "dysphoria" score (range 0–6), but the items were also examined separately. The highest dysphoria score was determined independent of the highest CES-D. Nonetheless, the highest dysphoria score and the highest CES-D were drawn from the same time point for 85.5% of participants.

Cognitive Impairment—Participants were administered the MMSE on each in-person testing occasion. The MMSE is a well-validated screening tool that assesses global cognitive functioning (Tombaugh & McIntyre, 1992). Scores range from 0 to 30, with lower scores indicating greater impairment. Participants' lowest MMSE score was utilized for the analysis, to indicate their greatest level of cognitive impairment.

Analyses

Analyses were performed using SAS version 9.2 (SAS Institute, Inc., Cary, NC). A Kappa analysis was used to assess agreement between presence of clinically significant depressive symptoms and physician diagnosis of depression. A series of multivariate logistic regression analyses were conducted, with continuous variables centered in all models in which moderation was tested, to avoid problems associated with multicolinearity. Because the current study utilized a twin sample, corrections were made to confidence intervals using robust standard errors to adjust for non-independence of observations. In order to make these corrections, a SAS (v. 9.2) macro was employed to assess the correlation between twin pairs and increase the variance estimates in proportion with the correlation. This procedure expanded the confidence intervals and provided a more conservative estimate of the effect.

Results

The mean of participants' highest CES-D scores was 15.4 (SD = 9.1). One hundred forty-five participants (42.2%) had a CES-D score of 16 or greater at some point, compared to 19 (5.5%) who received a depression diagnosis from a physician (see Table 1). Overall, there was poor agreement between clinically significant scores on the CES-D and physician diagnosis of depression (kappa = .08). Of those with an elevated CES-D score, just under 10% were detected, while just under 25% of those identified as depressed by physicians never had an elevated CES-D score.

Subsequent analyses examined factors that may have affected accurate physician detection of depression in later life. Preliminary logistic regressions revealed that neither age nor sex of the participant was related to physician detection of depression (OR = 0.92, 95% CI: 0.92–1.05 and OR = 1.48, 95% CI: 0.56–4.00, respectively). However, in order to be conservative, the effects of age and sex were controlled for in all analyses.

The individual's highest CES-D score was significantly related to physician detection of depression, as anticipated (OR = 1.12, 95% CI: 1.06–1.18). A one unit increase on the CES-D increased the likelihood of physician detection by 12%. Next, patients' endorsement of dysphoria (two items on the CES-D) was examined as a potential moderator of the relation between CES-D score and physician detection (Table 2). The mean of the highest dysphoria score was 1.81 (SD = 1.52). The mean of the highest depressed item was 0.82 (SD = 0.91) and highest sad item was 1.00 (SD = 0.81). Note that a rating of "1" is equivalent to "some or little of the time" or "1–2 days in the past week." When considered together with overall CES-D score, only patient endorsement of dysphoria was significantly associated with physician detection of late-life depression (OR = 2.09, 95% CI: 1.06–4.15), suggesting that dysphoria facilitated detection controlling for total CES-D score. For every unit increase on the dysphoria scale (range 0–6), physicians were about twice as likely to detect depression. An interaction between CES-D score and dysphoria was not significant (OR = 1.03, 95% CI: 0.99–1.07).

Logistic regression analyses were then run separately for the two items on the dysphoria scale, to examine whether the items (i.e., "I felt sad" versus "I felt depressed") may perform differently (Table 3). With regard to main effects, endorsement of the depressed item was associated with physician detection, whereas the highest CES-D score was not; this was not the case for the endorsement of feeling sad. Furthermore, the interaction between overall CES-D score and endorsement of the depressed item was significant (OR = 1.06, 95% CI: 1.01–1.12), indicating that endorsement of the depressed item moderated the relation between overall CES-D and the physician diagnosis of depression. The endorsement of the sad item alone did not moderate the relation between overall CES-D score and physician diagnosis (OR = 1.00, 95% CI: 0.94–1.07).

To characterize the interaction between the depressed item and total CES-D score, separate regression analyses were run examining the relation between overall CES-D score in those with higher versus lower endorsement of the depressed item, utilizing a median split. The relation between overall CES-D scores and physician diagnosis of depression was significant only in those with higher endorsement of feeling depressed (OR = 1.12, 95% CI: 1.05–1.19). Overall CES-D score was not significantly associated with physician detection among those with lower endorsement of feeling depressed (OR = 1.03, 95% CI: 0.80–1.33).

A post-hoc descriptive analysis was conducted examining symptom patterns in those who were detected versus those who were not. Those who scored 16 or more on the CES-D and were detected by a physician ("true positives," n = 14) had a significantly higher CES-D total score (M = 31.40 vs. 23.48) compared to those who scored 16 or greater on the CES-D, but were undetected ("false negatives," n = 131). The symptom pattern also differed; true positives had significantly higher scores on the depressed item, whereas false negatives had relatively higher scores for several symptoms, including "I did not feel like eating; my appetite was poor," "I had crying spells," and "people were unfriendly."

Finally, cognitive impairment was examined as a moderator of the relation between overall CES-D score and physician detection. The mean of the lowest MMSE score was 27.65 (SD = 1.61) and scores ranged from 22 to 30. Cognitive impairment was not related to detection of late-life depression beyond overall CES-D score. Further, the interaction between CES-D

score and cognitive impairment was not significant (OR = 0.98, 95% CI: 0.94–1.01). Contrary to expectation, an examination of Table 1 suggests that there was no difference with regard to cognitive impairment between individuals with significant depressive symptoms who were detected by their physicians and those who were not detected.

Discussion

Findings from the present study indicate that the vast majority of adults with clinically significant depressive symptoms in later life are undetected by primary care physicians. Of the 344 participants in the current study, 136 (39.5%) were above the clinical cutoff on the CES-D at some point between 1986 and 1994. However, physicians identified only 14 of these individuals (10.3%) via outpatient diagnosis, antidepressant prescription, or inpatient hospitalization during the same years. This percentage appears to be somewhat lower than that reported in other studies (e.g., Mitchell et al., 2009; Mitchell et al., 2010). We cannot rule out the possibility that the rate of detection was lower due to historical differences between studies or due to ours being a Swedish sample, but we think it most likely that rates of detection were lower due to the fact that gold standard assessments and physician visits were not perfectly aligned temporally in the present study.

Findings from the present study also affirm that symptom presentation plays an important role in physician assessment of late-life depression. Results indicate that greater frequency or severity of depressive symptoms increases the odds of depression recognition by physicians. Furthermore, there is a significant interaction between symptom severity and a single item on the CES-D (i.e., “I felt depressed”) in predicting the detection of depression in later life. In fact, patients’ endorsement of feeling depressed appears to be associated with physicians’ detection of depression more than overall level of depressive symptoms. On the other hand, patients’ endorsement of feeling sad apparently does not alert physicians to the presence of depression in the same way.

A premise of the current study is that participants who rate symptoms such as feeling depressed or feeling sad more highly on the CES-D are more likely to report these same symptoms to their physician. As such, results suggest that patients’ endorsement of feeling depressed facilitates the detection of depression in later life, whereas the odds of non-recognition are increased when the endorsement of this particular symptom is omitted. Prior evidence from another Swedish sample suggests that a one-item screening question about feeling depressed (i.e., “Are you depressed?”) has moderate sensitivity in detecting individuals with clinically relevant depressive symptoms among medical patients (Skoogh et al., 2010). Conversely, as evidenced in the present study, many older adults may not endorse feeling depressed so directly, which remains problematic for accurate assessment of late-life depression. For instance, older adults are less likely than younger adults to utilize affectively-laden language (Goldberg, Breckenridge, & Sheikh, 2003; Lawton, Kleban, & Dean, 1993; Stanley & Novy, 2000). Furthermore, older individuals are more likely to endorse physical complaints and other symptoms of depression rather than symptoms of dysphoria or sadness (Gallo, Anthony, Rabins, 1994; Newmann, Engel, & Jensen, 1991; Hybels, Landerman, & Blazer, 2012).

At least two different conceptualizations of non-dysphoric depression in later life have been proposed. Newmann and colleagues (1991) coined the term “depletion syndrome,” which has the prominent symptoms of anhedonia, loss of appetite, hopelessness, and thoughts of dying. Another presentation, termed “depression without sadness” by Gallo and colleagues (1997), is characterized by feelings of hopelessness, helplessness, worthlessness, and thoughts of death. In either case, non-dysphoric depression among older adults is associated with increased risk of death, cognitive impairment, psychological distress, and functional

impairment (Gallo, Rabins, Lyketsos, Tien, & Anthony, 1997). These negative health implications may be exacerbated if physicians are less likely to detect depression in later life when feeling depressed is not endorsed, as shown in the current study.

The present study extends findings from other studies that have examined the role of symptom presentation in physicians' detection of depression. Whereas Menchetti and colleagues (2009) found that chief complaints of pain or physical complaints impeded recognition of depression, the present study found that a pattern of not endorsing depression while endorsing other symptoms such as crying, appetite loss, and feelings of thwarted belongingness, was related to poorer detection. Because dysphoria is not always endorsed by older adults, physicians should be trained to assess for other symptoms of depression, such as anhedonia, somatic complaints, and social impairment. There also could be other benefits to assessing for anhedonia, since the lack of positive affect (rather than endorsement of dysphoria) among older adults is the strongest predictor of all-cause mortality (Blazer & Hybels, 2004).

Accurate assessment of depression in later life is especially important in primary care, as older adults most often seek mental health services from general medical settings (Harmon, Veazie, & Lyness, 2006; Bogner, de Vries, Maulik, & Unützer, 2009). A review by Luoma, Martin, and Pearson (2002) found that older adults who died by suicide were more likely than younger adult suicide decedents to visit their primary care physician within one month of the death (58% versus 23% respectively). Because the vast majority of older adults who die by suicide are depressed (85%; Conwell & Brent, 1995), accurate detection of late-life depression by primary care physicians represents a crucial suicide prevention strategy.

Results from the present study do not support cognitive impairment as a moderator of the relation between overall level of depressive symptoms and physician diagnosis of depression. There are several possible explanations for this outcome. Participants in the present sample needed to be able to complete self-reported measures of depression. In addition, the average lowest MMSE score was in the "normal" range and no participant scored below 22, indicating that more severe levels of cognitive impairment were not well-represented in the sample. It also is possible that there has been an increase in the awareness among physicians of the high prevalence of depression in the context of dementia, and those suspected of dementia may have undergone a more thorough medical or neuropsychological evaluation, which often includes formal screening for depression.

Results of the present study should be interpreted in light of several limitations. The present study operationally defines endorsement of dysphoria by item endorsement on the CES-D; however, we do not know what information the participants disclose to their physicians regarding depressive symptoms. For instance, there were five individuals in the present study who were diagnosed with depression by their physician, but never scored 16 or more on the CES-D. Nevertheless, we found a significant relation between self-reported depressive symptoms and physician diagnosis of depression in the present study. Another potential limitation is that timing of CES-D administration and physician office visits was not coordinated. By taking any diagnosis and the highest CES-D score, we minimized the chance of overlooking a relation between diagnosis and depressive symptom endorsement, if one existed. Further, strong correlations between the CES-D at each of the six time points were found, suggesting that CES-D scores are quite stable over time. A final potential limitation involves generalizability of findings from Swedish twins to other cultures. As described previously, a stringent back-translation protocol was used for the CES-D and MMSE to ensure that original meanings were preserved. Notably, the word for "depressed" in Swedish is "deprimerad." These limitations notwithstanding, the present study is the first

to examine the role of specific symptoms (i.e., dysphoria) and cognitive impairment in physicians' recognition of late-life depression.

Findings of the present study have important clinical implications. Physicians who are differentially biased toward diagnosing depression only in the presence of reports of feeling depressed are likely to miss many depressed older adults who do not use this language or who present with chief non-dysphoric symptoms of depression. Some physicians have suggested utilizing terminology that is less pathology-focused when discussing depressive symptoms with older adults (e.g., "How have your spirits been lately?"; Gallo & Rabbins, 1999). Furthermore, broadening the range of depressive symptoms assessed by primary care physicians is vital. Disseminating information about unique aspects of late-life depression to physicians providing direct care to older adults also may aid in correcting symptom biases. Additionally, routine use of screening instruments (e.g., CES-D) in primary care may help identify older adults with clinically significant depressive symptoms (Lyness et al., 1997).

It should be noted that older adults benefit from many of the same psychotherapy interventions as younger adults and there exist a number of evidence-based treatments for depression in late life (Fiske et al., 2009), including older adults with dementia (Teri, McKenzie, & LaFazia, 2005). Nonetheless, psychotherapy is increasingly underutilized compared to pharmacological approaches (Akincigil et al., 2012; Gaboda et al., 2011). With improved detection of depression in later life, these evidence-based therapies may be available to more individuals who could benefit from them.

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Table 1

Characteristics of Cases Defined by CES-D Cutoff versus Physician Diagnosis of Depression.

		Physician Diagnosis		
		Yes	**No**	**Total**
CES-D Cutoff	Yes	n = 14 CES-D = 31.40 (7.46) MMSE = 27.00 (1.60)	n = 131 CES-D = 23.48 (6.21) MMSE = 27.44 (1.65)	145
	No	n = 5 CES-D = 10.06 (2.62) MMSE = 28.00 (0.82)	n = 194 CES-D = 9.00 (3.68) MMSE = 27.83 (1.57)	199
	Total	19	325	344

Note. Cutoff for CES-D was 16; CES-D = Center for Epidemiologic Studies- Depression Scale; MMSE = Mini-Mental State Examination; Scores represent the mean and (standard deviation).

Table 2

Logistic regression analyses predicting physician detection by dysphoria scale.

Variable	Wald χ^2	OR	95% CI	
			Low	High
Age	2.11	0.96	0.89	1.03
Sex	0.04	0.88	0.27	2.89
CES-D Total	0.60	0.96	0.84	1.09
Dysphoria Scale	4.28 *	2.09 *	1.06	4.15
Dysphoria X CES-D	3.27	1.03	0.99	1.07

* Significant at the p<.05 level

Note: OR = Odds Ratio; CI = Confidence Interval; CES-D = Center for Epidemiologic Studies-Depression Scale

Table 3

Logistic regression analyses predicting physician diagnosis by individual dysphoria items.

Variable	Wald χ^2	OR	95% CI	
			Low	High
Depressed Item				
Age	3.03	0.94	0.87	1.02
Sex	0.03	1.12	0.33	3.73
CES-D Total	0.56	0.97	0.87	1.08
Depressed Item	5.76*	2.72*	1.17	6.29
Dep X CES-D	5.50*	1.06*	1.01	1.12
Sad Item				
Age	2.19	0.97	0.90	1.03
Sex	0.90	1.14	0.35	3.73
CES-D Total	7.41*	1.13*	1.02	1.24
Sad Item	0.55	0.82	0.30	2.30
Sad X CES-D	0.23	1.00	0.94	1.07

*Significant at the p<.05 level

Note: OR = Odds Ratio; CI = Confidence Interval; CES-D = Center for Epidemiologic Studies- Depression Scale; Dep = Depressed Item.