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Evaluating the Cornell Scale for Depression in Dementia as a Proxy Measure in Nursing Home Residents With and Without Dementia

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Abstract

Objectives—We evaluated the use of the Cornell Scale for Depression in Dementia (CSDD) as a proxy measure. Study questions were: How do residents' self-reports on the CSDD compare with the nurse proxy CSDD ratings of the resident? How do characteristics of depression as rated by the resident CSDD and the nurse CSDD compare? To what extent are demographic and clinical variables associated with resident CSDD, nurse CSDD, and the discrepancy between resident and nurse CSDD scores?

Methods—Residents and nurse proxy pairs ($n=395$ pairs) from 28 nursing homes (NHs) participated. We calculated discrepancy scores for total and subscale CSDD scores, examined correlations between resident and nurse CSDD scores, and described rates of clinical depression using each of the scores. We conducted multivariate analyses to examine factors associated with resident and nurse CSDD and discrepancy scores.

Results—On average, participants had mild cognitive impairment, were White, and female. Associations between resident and nurse CSDD were low ($r=.16$). The mean discrepancy score was -2.03 ($SD=5.28$, $p<0.001$), indicating that nurses evaluated residents as less depressed than residents evaluated themselves. Discrepancy scores were not associated with residents' cognitive status, but were associated with a measure of self-report reliability. Regression analyses indicated that depression diagnosis accounted for a small but significant association with resident CSDD, but was not significantly associated with nurse CSDD.

Conclusion—These findings underscore the importance of obtaining resident input when assessing depression in NH residents with dementia, and educating NH nurses in the most effective ways to assess depression.

Keywords

depression; proxy measure; nursing homes; dementia

Introduction

Depression is a common problem in nursing homes with nearly a quarter of residents identified as having this condition (Jones, Marcantonio, & Rabinowitz, 2003; Kaup et al., 2007). Depression in older adults, including those in nursing homes (NH), is associated with decreased quality of life (Gonzalez-Salvador et al., 2000; Shin, Carter, Masterman, Fairbanks, & Cummings, 2005; Snow, R. Dani, et al., 2005), poorer performance of activities of daily living (Lenze et al., 2005), and increased mortality (Rovner et al., 1991). Cognitive impairment is also common among NH residents, with over 50 percent of this population demonstrating mild to severe impairment (Gruber-Baldini, Zimmerman, Mortimore, & Magaziner, 2000). Depression among NH residents is frequently unrecognized (Cohen, Hyland, & Kimhy, 2003; Gruber-Baldini et al., 2005), and even more likely to go unrecognized among those with cognitive impairment (Brown, Lapane, & Luisi, 2002).

The relationship between cognitive function and depression is unclear. Some studies report positive associations between depression and higher cognitive functioning (Jones et al., 2003), while others report that rates of depressive symptoms increase as cognitive abilities decline (Barca, Selbaek, Laks, & Engedal, 2008; Forsell & Winblad, 1998). One systematic review found no relationship between cognitive status and depression (Verkaik, Nuyen, Schellevis, & Francke, 2007).

Thus, it is important for clinicians to be alert to signs and symptoms of depression in persons with dementia, as well as to be aware of the possible ways in which manifestations of depression change with increasing cognitive impairment. In the early stages of dementia, self-report of symptoms is a commonly accepted standard for detecting and measuring depression. For this reason, many depression scales rely, wholly or in part, on self-report. Evidence suggesting that persons with cognitive impairment cannot provide accurate, reliable self-report is inconclusive. In fact, Snow and colleagues (2005) suggested that among those who can self-report, severity of cognitive impairment (as measured by a cognitive screening measure) is not itself a significant predictor of self-reported depression accuracy (Snow et al., 2005). However, when self-report is unreliable or unavailable due to cognitive dysfunction, observation of behaviors that are suggestive of depression and caregiver/clinician evaluation of depression are recommended ("Consensus statement on improving the quality of mental health care in U.S. nursing homes: management of depression and behavioral symptoms associated with dementia," 2003). Screening tools that incorporate behavioral observation are recommended for the nursing home setting, given the high rates of dementia therein (Kallenbach & Rigler, 2006).

The Cornell Scale for Depression in Dementia (CSDD) is such a screening measure, since it incorporates information from interviews with both patients and caregiver-informants. If there are discrepancies, the interviewer meets with the patient and informant a second time and makes a final rating based on his or her best clinical judgment (Alexopoulos, 2002). In this way, the interviewer can evaluate depressive signs and symptoms even when patients cannot reliably self-report. Although the original administration guidelines (Alexopoulos, 2002) recommend this tripartite approach, some studies use the CSDD as an informant-based scale only, usually relying on nurses as raters (Barca et al., 2008; Ersek, Polissar, & Neradilek, 2011; Gruber-Baldini et al., 2005; Kaup et al., 2007).

Informant-based or proxy reports are often used to measure symptoms in persons with limited ability to self-report. There is evidence that involving informants in such assessments results in useful and accurate diagnostic information related to depression, and potentially increases detection of depressive symptoms (Burrows, Satlin, Salzman, Nobel, & Lipsitz, 1995; Davison, McCabe, & Mellor, 2009). The accuracy of these reports depends on several factors, including type of informant (e.g., family caregiver, nurse, physician), type of symptom (i.e., physical or psychological), and proxy and patient characteristics. (Kutner, Bryant, Beaty, & Fairclough, 2006; Snow, Cook, Lin, Morgan, & Magaziner, 2005). One patient characteristic influencing proxy-patient agreement is cognitive status. In general, cognitive impairment is associated with lower reports of symptom presence and intensity (Snow et al., 2005). This tendency may account for the finding that cognitive impairment is associated with lower rates of documented pain in older adults (Won et al., 1999). However, Snow and colleagues reported that cognitive impairment was a proxy for an individual's level of deficit awareness, and that when both severity of cognitive impairment and deficit awareness were entered as predictors of accuracy of patient self-report, only deficit awareness was found to be a significant predictor (Snow et al., 2005).

To our knowledge there are no published studies that evaluate the use of the CSDD as a proxy measure. Thus, the purpose of this exploratory study was to examine the performance of the Cornell Scale for Depression in Dementia (CSDD) as a proxy report by examining factors associated with differences between resident CSDD ratings (resident CSDD) and nurse proxy CSDD ratings of the resident (nurse CSDD). More specifically, we asked the following questions:

1. How do resident CSDD and nurse CSDD compare?
2. How do characteristics of residents' depression (i.e., mood, behavioral, physical, cyclic functions, and ideational disturbances) as reported by residents and nurse proxies compare?
3. Is the level of cognitive impairment (intact, borderline to mild, and moderate to severe) associated with the discrepancy between resident and nurse CSDD scores (discrepancy scores)?
4. To what extent are demographic (age, gender, and education) and clinical (cognitive function, depression diagnosis, pain) variables associated with resident CSDD, nurse CSDD, and discrepancy scores?

Methods

This cross-sectional, descriptive study was a secondary analysis from a randomized clinical trial that examined the effects of a pain management algorithm on pain variables, physical function and depression. Residents were recruited from 28 Washington State nursing homes. Trained research assistants administered the CSDD using a semi-structured interview format for each resident and the nurse who managed his or her care. Interviews were conducted separately for each respondent, so neither the nurse nor the resident was aware of the other's responses.

Sample

Residents were sampled from the database of the parent study (N=496). Inclusion criteria for the parent study were: age 65 years and older, identified as having moderate to severe pain, expected to be at the facility for at least six months, and residing at the facility at least 3 weeks at the time of recruitment (to ensure that nurse proxies were familiar with the residents). Cognitive impairment was not an inclusion or exclusion criterion in the parent

study. However, to be eligible for this analysis, the nursing home resident and nurse proxy each must have responded to at least 17 of the 19 items on the CSDD, and to the *same* 17 items. Because residents with severe cognitive impairment were not able to respond to the minimum required items, they were not included in the analysis. The final sample included 395 resident/nurse proxy pairs.

Measures

Demographic variables

Age, race, and educational level were abstracted from each resident's medical record. Most of this information was obtained from the admission assessment of the Minimum Data Set (MDS) version 2.0, a federally-mandated care planning tool (Centers for Medicare & Medicaid Services, 2008). If information on the MDS was incomplete, research staff obtained the data from other parts of the medical record (e.g., social work assessment).

Pain Summary Score

Pain was measured by summing the scores of two items on the MDS version 2.0: *pain frequency* (0 = "no pain," 1 = "pain less than daily," 2 = "pain daily") and *pain intensity* (1 = "mild pain," 2 = "moderate pain," 3 = "Times when pain is horrible or excruciating"). Range of scores was 0–5.

Cognitive function

The Cognitive Performance Scale (CPS) is a 5-item instrument that measures cognitive function, including short and long-term memory, decision-making skills, communication, and independence in eating. The CPS is part of the MDS version 2.0. Based on standard instructions, a nursing home designee assigns a summary score between 0 (intact) and 6 (very severe impairment). Scores on the CPS are significantly associated with the Mini-Mental State Examination (MMSE) scores, nursing assessments, and diagnosis of dementia. Overall inter-rater reliability of all items is acceptable at 0.85 (Morris et al., 1994).

Assessment of participants' ability of self-report

The focus of the parent grant was residents' pain, which was the rationale for identifying reliability in self-report of pain rather than depression. To determine if participants were able to report pain reliably, research assistants used one of two approaches. Participants were asked to describe the worst pain they had ever experienced and to locate its intensity on a vertically-oriented pain scale which was anchored by the phrases "no pain" at the bottom and "the most intense pain imaginable" at the top. A response was considered reliable if the participant located their worst pain on the top third of the scale (all reported having experienced severe pain as their worst). This approach was chosen because a variation of this strategy had been used effectively by other investigators (Taylor, Harris, Epps, & Herr, 2005). However, some residents who otherwise appeared capable of self-report had difficulty responding to these instructions. Therefore, a second approach was also used in which the research assistant reviewed the participant's responses to items assessing *usual*, *worst*, *least* and *current pain*. If all responses were consistent (e.g., a greater intensity was reported for the *worst pain* item compared to the *least pain* item), the participant was assessed as providing reliable answers. If responses were not consistent, the research assistant asked the participant for clarification (e.g., "How is your least pain higher than your current pain?"). If the participant changed the response to a logically consistent one, the response was marked reliable. If the participant did not correct the discrepancy, the response was considered unreliable. Participants were coded "reliable" if they were able to provide reliable responses to at least one of these two approaches.

Depression

The Cornell Scale for Depression in Dementia (CSDD) is a 19-item scale used to measure depression in persons with dementia. The scale is administered in a semi-structured interview format to residents (with and without dementia) and to caregivers independently. For this study, the unit care manager provided the caregiver perspective and served as the proxies. Care managers typically were registered nurses who oversaw the entire plan of care for the resident. Usually, they worked the day shifts and interacted with primary care providers, social workers, therapists and other nursing staff, including certified nursing assistants, to coordinate the care of the resident. Occasionally, the care manager was new to the facility or to the unit and did not have intimate knowledge of the resident. In these cases, another licensed nurse (either registered nurse or licensed practical nurse) from the day shift who knew the resident well served as proxy

Scale items are rated from 0–2 and classified into groups: mood-related signs, behavioral disturbance, physical signs, cyclic functions, and ideational disturbance (See Table 1 for sample items). Items are summed to obtain subscale and total summary scores. Total scale scores above 10 (out of a possible 38) suggest major depression (Alexopoulos, 2002). The reliability and validity of the CSDD is supported in persons with dementia (Alexopoulos, Abrams, Young, & Shamoian, 1988a; Barca, Engedal, & Selbaek, 2010) as well as those without dementia (Alexopoulos, 2002; Alexopoulos, Abrams, Young, & Shamoian, 1988b; Korner et al., 2006; Mack & Patterson, 1994; Muller-Thomsen, Arlt, Mann, Mass, & Ganzer, 2005).

To examine the level of disagreement between the CSDD reports of nurse proxies and residents, we created a discrepancy score (nurse CSDD – resident CSDD) (Magaziner, 1997; Snow et al., 2005). The possible range for discrepancy scores was –38 (if resident reported highest level of depression and nurse reported lowest level of depression) to +38 (if nurse reported highest level of depression and resident reported lowest level of depression). A discrepancy score of 0 indicated that the resident and nurse provided identical CSDD scores. Discrepancy scores were also calculated for each of the CSDD subscales (mood, behavior, physical, cyclic and ideation).

Depression diagnosis

A diagnosis of depression was derived from the MDS Version 2.0 diagnosis list. Clinicians completing the MDS are instructed to check the box if a particular diagnosis has a “relationship to current ADL status, cognitive status, mood and behavior status, medical treatments, nursing monitoring, or risk of death.” Thus, only active diagnoses are marked as present. In some cases, a depression diagnosis was identified in the problem list of the resident’s medical record.

Statistical Analysis

The distribution of each variable was examined using frequency tables and histograms. Mean \pm SD (standard deviation) for continuous and ordinal variables and percentage frequencies for categorical variables were calculated to describe the demographic and clinical characteristics of the sample. We used the paired two-sample t-test to examine whether the mean nurse CSDD and resident CSDD total and subscale scores were similar (study questions 1 and 2). For study question 1, we also: a) calculated Pearson correlation coefficients for nurse CSDD and resident CSDD total scores; and b) compared the percentage of residents CSDD and nurse CSDD scores that indicated mild depression versus probable/major depression (i.e., total CSDD scores of 6–10 or 11, respectively). Study question 3 was addressed using an analysis of variance (ANOVA) to examine the association between the discrepancy score and cognitive impairment (grouped as intact,

borderline to mild, and moderate to severe impairment). Study question 4 was examined using: a) Pearson correlations among predictor variables, nurse and resident CSDD scores, and discrepancy scores. To filter out variables weakly associated with each dependent variable, only correlations of $p < 0.2$ from the univariate analyses were included into multivariate models. A multivariate linear regression model was constructed for each of the three dependent variables (nurse CSDD scores, resident CSDD scores, and discrepancy scores). Models were built using the forward selection and backward elimination variable selection techniques ($p < 0.05$ for the entry and retention in the model). All data analyses were conducted using PASW Statistics Version 18 (@SPSS Inc: An IBM company, Chicago, IL). A p -value < 0.05 was used to denote statistical significance.

Results

Table 2 shows descriptive statistics for the demographic and clinical variables. The sample consisted of 395 residents, mean age 84 years, and primarily female, White, and English speaking. The mean score on the Cognitive Performance Scale (CPS) was 2.19, suggesting that on average residents in this study had mild cognitive impairment. Almost 45 percent of the sample had a diagnosis of dementia as indicated on the MDS and 65 percent had a diagnosis of depression.

Q1 and Q2: Comparison of resident and nurse CSDD scores

The mean nurse CSDD total score was 3.60 ($SD=3.68$). The mean resident CSDD total score was 5.63 ($SD=4.43$). The Pearson correlation coefficient between resident and nurse CSDD scores was statistically significant but small ($r = .162$, $p = .01$). The mean discrepancy score was -2.03 ($SD=5.28$, $p < 0.001$) indicating that, on average, nurses evaluated residents as less depressed than residents evaluated themselves. Figure 1 illustrates the discrepancy between resident and nurse proxy summary score ratings. Complete agreement was reached in only 10% of the sample; in 60% of cases, nurse proxies rated resident depression lower than the residents rated their own depression.

Table 3 shows the mean nurse CSDD, the resident CSDD, and discrepancy scores of the CSDD subscales. Compared to nurse proxy ratings, residents self-reported more symptoms on the following subscales: mood, $t(383) = -4.70$, $p < .001$; physical, $t(331) = -8.83$, $p < .001$; cyclic functions, $t(369) = -9.00$, $p < .001$; and ideation disturbances, $t(377) = -5.53$, $p < .001$. In contrast, residents self-reported fewer symptoms on the behavior disturbances subscale compared to nurse proxy ratings, $t(388) = 4.88$, $p < .001$. Furthermore, cyclic function subscale scores (mean = $-.79$, $SD=1.7$) were the largest contributor to the discrepancy scores, followed by the physical symptoms subscale scores (mean = $.69$, $SD=1.4$); in contrast, the behavior symptoms subscale score (mean = $.29$, $SD=1.18$) contributed the least to the discrepancy scores.

Figure 2 illustrates the finding that residents rated themselves as more depressed in the categories of minor depression and probable/major depression than did nurse proxies. For example, 55 residents rated themselves in the range of probable/major depression whereas only six nurse proxies reported the resident to be in the range of probable/major depression. For the 65.1% of residents who had a diagnosis of depression on the MDS, 94% rated themselves in the depressed range on the CSDD and only 6% rated themselves as not depressed. Nurses' ratings were consistent with a depression diagnosis in 80% of cases, with nurses rating 20% of residents with a depression diagnosis as not depressed.

Q3: Discrepancy score and cognitive impairment

The mean discrepancy score was only slightly lower among the cognitively intact residents (mean=3.78, SD= 3.67) as compared to residents with borderline to mild impairment (mean=4.28, SD = 3.64), and to residents with moderate to severe impairment (mean=4.29, SD=3.91). The differences among these three groups were not statistically significant ($F(2, 394) = .46, p = .63$).

Q4: Discrepancy scores and their relationship to demographic and clinical variables

To examine the effect of demographic and clinical variables on the discrepancy score, Pearson correlation coefficients between the discrepancy score and each of the possible covariates were calculated. Table 4 displays the Pearson correlations for nurse CSDD, resident CSDD, and discrepancy scores with each of the predictor variables. The correlations with the discrepancy score were relatively weak, ranging from -0.16 to 0.12 . Variables that were associated with resident CSDD and nurse CSDD total scores included age ($r = -.13, p=.01$), depression diagnosis ($r = .14, p = .01$), and pain reliability ($r = .17, p = .001$). Age, pain frequency, pain summary score and pain reliability were statistically significant in their correlation with the discrepancy score. Age, pain summary score, pain reliability, depression diagnosis, and education all had p values of $<.20$ and thus were included in the multivariate modeling.

Table 5 displays the results of the multivariate analyses. Reliability of pain self-report, and depression diagnosis were significant predictors of resident CSDD, accounting for 5% of the variance. Residents whose pain reports were reliable and who had a depression diagnosis as indicated on the MDS reported higher CSDD scores. The pain summary score was the only significant predictor of nurse CSDD, accounting for 2% of the variance. Thus, nurses rated resident depression higher when resident pain scores were higher. Reliability of pain self-report, pain summary score, and age were all significant predictors of the discrepancy score, accounting for 5% of the total variance. The regression coefficient for pain reliability was negative, indicating that lack of reliability in reporting pain was associated with a larger discrepancy score. Thus, residents whose pain reports were reliable had discrepancy scores that were more negative (i.e., nurse proxies rated residents less depressed). The regression coefficients for pain summary scores and age were positive, thus, residents who had higher pain summary scores or were older had more positive discrepancy scores (i.e., nurse proxies rated residents more depressed).

Discussion

This study addresses a clinically important question regarding the concordance between nurse and NH resident depression ratings. Proxy ratings are commonly used in research and clinical care to measure or assess symptoms such as pain, dyspnea, and depression. In many patient populations, such as persons with advanced dementia and those at the very end-of-life, proxy ratings may provide the primary source of information about patients' internal states (Kutner et al., 2006; Magaziner, 1997). The CSDD, a widely used measure, incorporates a tripartite approach to assessing depression; that is, resident and caregiver reports are filtered through a third-party assessor. While this approach has been shown to be reliable and valid, in the typical nursing home setting this approach is often clinically infeasible and is thus unlikely to be implemented into routine practice. More typically, nurses make the assessment, presumably with input from residents when available. Thus, it is essential to investigate the agreement between nurse proxies and residents.

Overall, our study indicates that the concordance between nurse and resident CSDD scores is poor, a finding that is similar to that of Burrows and colleagues (Burrows et al., 1995).

However, the clinician proxies in our sample were more likely to *underestimate* depressive symptoms, whereas the findings of Burrows and colleagues, as well as other investigators, demonstrates that proxy assessment of depression is *higher* than self-reported depression in persons with dementia (Magaziner, Zimmerman, Gruber-Baldini, Hebel, & Fox, 1997; Teri & Wagner, 1991) (Burrows et al., 1995). Indeed, our study found that 78% of residents who rated themselves as having at least mild depressive symptoms were not rated as having depressive symptoms by nurse proxies, nor were the 89% of residents who self-reported depressive symptoms that indicated probable/major depression rated as having these symptoms by nurse proxies. Given the findings from numerous studies that nursing home residents and persons with dementia tend to underreport their symptoms (Burrows et al., 1995; Davison et al., 2009) (Snow, M. E. Kunik, et al., 2005), our finding is particularly troubling, since relying on nurse proxy judgments may exacerbate the problem of under-identification of depression.

Residents in our study reported more mood disturbances, cyclic dysfunction (i.e., sleep disturbances) and negative ideations than did nurse proxies, as measured by the corresponding subscale scores. That nurses were less likely to endorse mood and ideation items than residents is consistent with previous research in which proxy–patient agreement is lower for less observable phenomena (Snow et al., 2005). On the other hand, the large, negative discrepancy scores for cyclic functions and physical signs (i.e., appetite loss, lack of energy, weight loss) are unexpected in that these subscales reflect more observable phenomena. In completing the CSDD, we did not ask nurses to review residents’ medical records to ensure accurate reporting. Thus, these discrepancy scores may reflect inaccuracies in nurses’ ‘gestalt’ retrospective assessments about residents’ status and/or poor communication between nurse care managers and other nursing staff (e.g., night nursing staff, certified nursing assistants) who work more directly with residents and could provide more accurate assessments. It is also possible that nurse proxies were less sensitive to observable phenomena if the nurse perceived the phenomena as normal or was used to residents’ moods or behaviors.

Neither resident CSDD, nurse CSDD, nor discrepancy scores were associated with residents’ cognitive impairment. Moreover, there was concordance between 94% of residents’ CSDD scores and depression diagnosis, as compared to only 80% concordance between nurse proxy CSDD scores and depression diagnosis. These findings suggest that persons with mild to moderate dementia are able to accurately report depressive symptoms. Previous investigations also have found that the ability to report symptoms such as pain and depression often are preserved in persons with mild to moderate—and even severe—cognitive impairment (Pautex et al., 2006; Snow, M. E. Kunik, et al., 2005; Taylor et al., 2005).

Multivariate analyses were, for the most part, unable to identify the factors that best predict resident CSDD, nurse CSDD, and the discrepancies between the two scores; our regression models were only able to explain 2–5% of the variance in scores. Perhaps this is because the parent study was not designed to address the questions posed in this secondary analysis. Thus, potentially important variables were not measured— variables such as: independent verification of depression diagnosis, nurse proxies’ familiarity with residents, and nurse proxies’ education and training in detecting depression. Despite this limitation, inclusion of pain variables provided intriguing findings that may be worth incorporating into future research. In the parent study, we used a reliability assessment to evaluate residents’ ability to report pain. This variable was significantly associated with residents’ CSDD scores, suggesting that greater insight about pain reporting (and possibly other internal states) is positively associated with accurate self-report in persons with dementia. In this sense, our findings are similar to those of Snow et al (Snow, M. E. Kunik, et al., 2005), who reported

that patients' awareness of their cognitive deficits was more highly associated with accurate depression self-report than a generic measure of cognitive function.

Several limitations need to be considered when interpreting the study findings. First, although the study sample is large, participants were predominantly White and were recruited from facilities in one geographic location. Second, the data were derived from a study that was not focused on depression per se, and it was thus that we used a less than ideal criterion measure for depression, that is, a documented diagnosis of depression from the medical record, mostly derived from the MDS. Also, our measure of residents' reliability of self-report was based on assessment of reliability in reporting pain, not depressive symptoms. However, both conditions are similar in that they have subjective (i.e., internal states) and objective (i.e., observable) manifestations. The executive functions necessary to interpret and report pain or depression are likely to be similar. Third, we did not measure variables known to influence concordance between proxy and patient reports, such as nurses' training and knowledge about depression in persons with dementia, and familiarity of the nurse proxy with the resident. Absence of these data, including basic characteristics of the nurse sample, limited our ability to explore the association between these important factors and resident-nurse proxy concordance. It also limits other investigators' ability to compare their results with ours.

Despite these limitations, this study has important implications for clinical practice and future research. First, our findings illustrate the importance of capturing resident input rather than relying solely on the nurse proxy. This strategy corresponds with the implementation of the MDS 3.0, which focuses on incorporating the residents' perspective whenever possible. A combination of resident self-report with proxy-based assessments may better capture residents' symptom experience. For persons with advanced dementia, using residents' medical histories to inform interpretation of behaviors will be essential. Second, using a brief measure to assess the reliability of self-report may assist with interpreting and weighting input from residents' reports. Additional research is needed to validate such a measure that is specific for depression. Third, future studies are necessary to examine how clinician and patient reports should be combined in evaluating depression and other symptoms. Fourth, research is needed to identify the potential benefits of input from multiple caregivers trained in techniques that improve the accuracy of proxy reports. Training caregivers in detecting depression in persons with dementia is a necessary and potentially useful step. One challenge to detecting depression is that it is an internal state. Focusing on the external manifestations by using multiple raters or increasing training to identify depression symptoms may decrease the discrepancy between nurse and resident and in turn detect depression. For example, nursing assistants' reports of resident pain have been shown to be quite accurate, especially when they are trained in specific methods to evaluate pain (Engle, Graney, & Chan, 2001; Ersek et al., 2011; Snow et al., 2004).

Depression and dementia are common among nursing home residents. Depression is treatable but must first be recognized by clinicians. Our study suggests that nurse proxy reports using the CSDD are a less than ideal substitute for expert clinician evaluation or resident self-report. It is clear that further research focusing on ways to improve nurse proxy depression reports is essential, if effective depression assessment techniques are to be incorporated into clinical practice in nursing homes.

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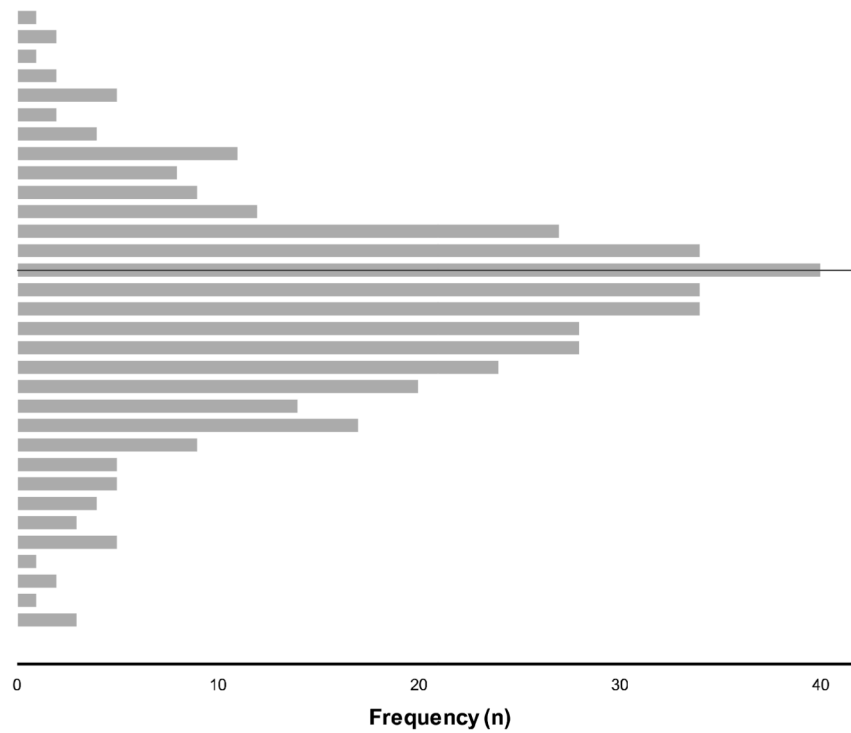


Figure 1.
Distribution of Cornell Scale for Depression in Dementia Discrepancy Scores (Nurse proxy score – Resident score)

Notes:

1. Negative scores = Residents rated themselves more depressed
2. Scores = 0, Residents and Nurse proxy ratings were equal
3. Positive scores = Residents rated themselves less depressed

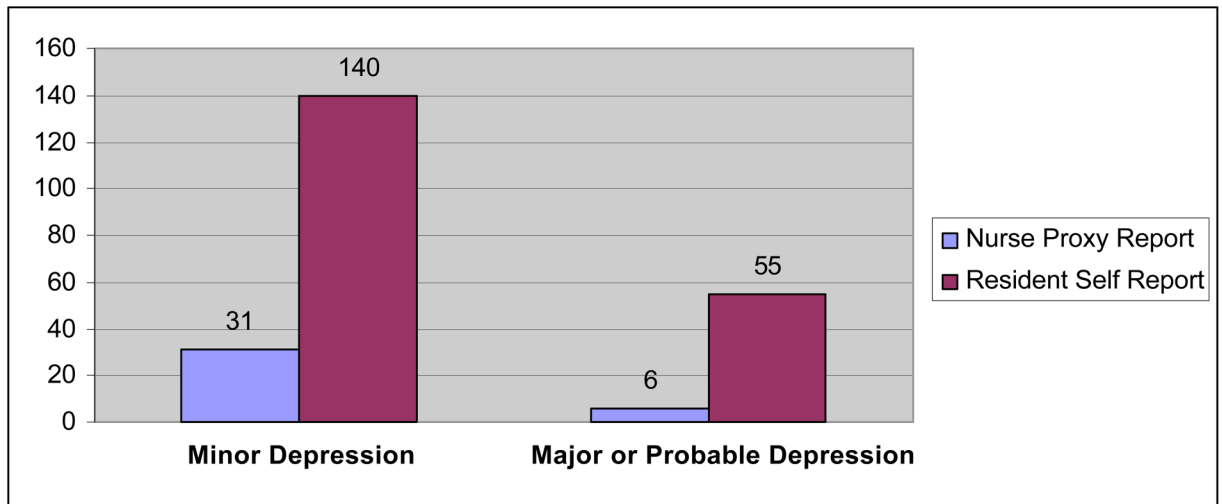


Figure 2.
Number of Residents Assessed as Having Depressive Symptoms: Comparing the Ratings of Residents and Nurse Proxies*

Table 1

Sample Items from Subscales of Caregivers and Residents

Subscale Category and Examples	Sample Item
Mood-Related Signs e.g. anxiety, sadness, irritability	CG: Has the resident been feeling anxious this past week? Has s/he been worrying about things s/he may not ordinarily worry about, or ruminating over things that may not be that important? RES: Have you felt worried or anxious in the past week? Have you been worrying about things you may not ordinarily worry about, or ruminating over things that may not be that important?
Behavioral Disturbance e.g. agitation, retardation, physical complaints	CG: Has the resident been so fidgety or restless this past week that s/he was unable to sit still for at least an hour? Was the resident so physically agitated that you or others noticed it? RES: Have you been fidgety or restless this past week? Have you been unable to sit still for at least an hour?
Physical Signs e.g. appetite loss, weight loss, lack of energy	CG: Has the resident been eating less than usual in the past week? Has staff had to urge or force him/her to eat? RES: How has your appetite been this past week compared to normal? Has it decreased at all? Have you felt less hungry or had to remind yourself to eat? Have others had to urge or force you to eat?
Cyclic Functions e.g. Diurnal variation of mood, difficulty falling asleep, early morning awakenings	CG: Has the resident had difficulty falling asleep in the last week, meaning later than usual for him/her? RES: Have you had any trouble falling asleep this past week? Does it take you longer than usual to fall asleep once you get into bed?
Ideational Disturbance e.g. suicide, self-deprecation, pessimism	CG: During the past week, has the resident had any thoughts that life is not worth living or that s/he would be better off dead? Has s/he had any thoughts of hurting or even killing him/herself? RES: During the past week, have you had any thoughts that life is not worth living or that you would be better off dead? Have you had any thoughts of hurting or even killing yourself?

Source: Alexopoulos, 2002; CG = Caregiver (Nurse) RES = Resident

Table 2

Descriptive statistics of the demographics and clinical variables N=395

	Mean \pm SD or %
Age (yrs)	83.6 (8.1)
Female	73.7%
Education	
<12 yrs	15.7%
High school graduate	40.3%
Some college, trade school	27.3%
Bachelor's degree	12.4%
Graduate degree	3.8%
White, nonHispanic	92.9%
Pain summary scores (possible range: 0–5)	2.2 (1.7)
Pain Reliability (percent of respondents assessed as reliable)	89.3%
Depression diagnosis	65.1%
Cornell depression summary score (possible range: 0–38)	
Nurse proxy score	3.6 (3.7)
Resident Score	5.6 (4.4)
MDS Cognitive Performance Scale (possible range: 0–6)	2.2 (1.3)
0 Intact	15.2%
1 Borderline intact	12.2%
2 Mild impairment	25.3%
3 Moderate impairment	37.7%
4 Moderate-Severe impairment	5.8%
5 Severe impairment	3.8%
Dementia diagnosis	44.8%

Table 3

Mean (SD) Discrepancy Scores (Nurse CSDD score – Resident CSDD score) on Subscales and Total

Subscale	Nurse Proxy	Resident	Difference
Mood (range –8–7)	1.6 (1.5)	2.1(2.0)	–.53 (2.2) [‡]
Behavior (range –4–6)	.76 (1.07)	.45 (.74)	.29 (1.2) [‡]
Physical (range –6–3)	.42 (.81)	1.1 (1.3)	–.69 (1.4) [‡]
Cyclic (range –7–6)	.41 (.93)	1.2 (1.4)	–.79 (1.7) [‡]
Ideation (range –6–6)	.43 (.92)	.84 (1.3)	–.42 (1.5) [‡]
Overall (range –18–21)	3.6 (3.7)	5.6 (4.4)	–2.0 (5.3) [‡]

* p < 0.05.

† p < 0.01.

‡ p < 0.001

Table 4
 Pearson correlation (*r*) of Predictor Variables with Nurse CSDD, Resident CSDD, and Discrepancy Scores

Variable	Nurse Proxy		Resident		Difference	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Age	.02	.65	-.13	.01	.12	.02
Pain summary Score	.13	.01	-.03	.61	.11	.03
Pain reliability	-.02	.65	.17	.00	-.16	.00
Education	.06	.28	-.04	.40	.08	.15
Gender	.04	.41	-.03	.51	.06	.27
Cognitive Performance	.00	.98	.03	.59	-.02	.67
Pain diagnoses	-.01	.80	.01	.93	-.01	.81
Diagnosis of Depression	.06	.22	.14	.01	-.08	.14

Table 5

Stepwise linear regression analyses of Resident CSDD, Nurse CSDD and Discrepancy Scores

	Unstandardized Regression coefficient	Standard Error
Resident CSDD Rating		
Intercept	2.48	±.74
Reliability of pain self-report	2.49	±.72 [‡]
Depression Diagnosis	1.42	±.47 [*]
R ² =.05		
Nurse CSDD Rating		
Intercept	2.92	±.31
Pain Summary Score	.29	±.11 [‡]
R ² =.02		
Discrepancy Score		
Intercept	-6.68	±3.14
Reliability of pain self-report	-2.56	±.88 [‡]
Pain Summary Score	.46	±.16 [‡]
Age (per 5 years)	.36	±.17 [*]
R ² =.05		

* p < 0.05,

‡ p < 0.01

‡ p < 0.001