

Measuring Depression in Hospitalized, Medically Ill, Older Adults

Lenore H. Kurlowicz and Joel E. Streim

Studies have consistently shown high prevalence rates of depression associated with negative medical, functional, and psychosocial outcomes in hospitalized, medically ill, older adults. Several issues pose challenges to measurement of depression in this population. In particular, symptoms simultaneously attributable to both medical illness and psychiatric problems may confound measurement of depression, and there is no distinct boundary between normal and abnormal symptoms. This article critiques prevalence research methods used to measure depression in hospitalized, medically ill, older adults and makes recommendations regarding future measurement approaches in both research and clinical practice. Through the identification of appropriate methods for measurement of depression in this population, psychiatric nurses can make a valuable contribution in this area of research as well as enhance effective case-finding and evaluation of depression in older, hospitalized, medically ill patients in the clinical setting.

Copyright © 1998 by W.B. Saunders Company

EXISTING RESEARCH on older adults hospitalized in acute medical settings confirms that the prevalence of depression—both major depressive disorders and minor depression—is between 25% and 45% (Kitchell, Barnes, Veith, Okimoto, & Raskind, 1982; Koenig, Meador, Cohen, & Blazer, 1988; Koenig et al., 1991). Depression in this population also is associated with negative medical, functional, and psychosocial outcomes (Katz, 1996). Considering that depression is a treatable problem that can have a significant impact on quality of life, identification of sensitive and specific methods for measurement of depression in hospitalized, medically ill, older adults is important for psychiatric nurses in both conducting research on this population and screening for depression in the clinical setting. However, several issues pose challenges in this area. Overlap between somatic symptoms caused by medical illness and its treatment with symptoms that characterize depression may confound measurement of depression. Difficulties also occur in differentiating depressive symptoms from those of common aging processes and in distinguishing normal mood changes that often accompany acute medical illness or hospitalization from more pathological or clinically significant

depressive states. Further complicating the attribution of symptoms, especially in older patients, is the notion that depressive symptoms are sometimes a direct and specific consequence of a general medical condition (Morrison & Kastenber, 1997). Traditionally, this has been called secondary depression, to distinguish it from primary depression, which is not a biological consequence of another medical disease.

We review methods used in prevalence research for measurement of depression in hospitalized, medically ill, older adults. Special attention is paid to the interplay between somatic and psychological symptoms of depression, cause of depressive symptoms, measurement and categorization of minor

From the School of Nursing, and the Department of Psychiatry, University of Pennsylvania, Philadelphia, PA.

Supported by grants from the National Institutes for Nursing Research (NIH) predoctoral fellowship #F31 NR06994-01, NIMH Grant #MH01300, Xi Chapter of Sigma Theta Tau International, and the Frank Morgan Jones Fund.

Address reprint requests to Lenore H. Kurlowicz, PhD, RN, CS, School of Nursing, University of Pennsylvania, 420 Guardian Drive, Philadelphia, PA 19104-6096.

*Copyright © 1998 by W.B. Saunders Company
0883-9417/98/1204-0005\$3.00/0*

depression, and appropriate cut-off scores on various rating scales. The advantages and disadvantages of different approaches also are discussed, and recommendations are made for measurement of depression in this population in both research and clinical practice. The methods used to identify relevant articles for this review included searches of MEDLINE, CINAHL, and PSYCINFO (1970 to 1996) databases with use of the key words depression and depressive disorders, depression and medical illness, depression detection, and depression and hospitalized elderly. Manual searches of reference lists of published literature are also included. Articles with primary data on prevalence and measurement were selected.

PSYCHIATRIC DIAGNOSTIC CRITERIA: CATEGORICAL MEASURES

Psychiatric taxonomies have been consistently used to classify depressive disorders in prevalence research on older adults hospitalized in acute medical settings. The taxonomies are defined in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1968), the most recent being the *DSM-III-R*, 1987, and *DSM IV*, 1994, and the *Research Diagnostic Criteria* (RDC), which was introduced in 1972 (Spitzer, Endicott, & Robins, 1978). Within each classification system, specific inclusion and exclusion criteria for diagnosing a range of mood disorders are delineated, and patient symptoms are then matched to the criteria for each psychiatric diagnosis. Conceptualized within a medical framework, the psychiatric taxonomies for mood disorders are designed to distinguish discrete depressive disorders (i.e., illnesses) from nonpathologically related depressive symptoms or states (i.e., normal fluctuations of mood).

Diagnostic criteria for major depressive disorder (MDD) are commonly used to classify depression in hospitalized, medically ill, older adults and are often used as the standard by which older patients' depressive symptoms are classified in research. Five symptoms from a list of nine (cognitive, affective, and somatic) must be present nearly every day during the same 2-week period and must represent a change from previous functioning. The nine symptoms include depressed mood, diminished pleasure, weight loss or gain, sleep disturbance, psychomotor changes, fatigue, worthlessness

or guilt, diminished concentration, and suicidal ideation.

Research has shown that many older adults, including those who are medically ill, experience depressive symptoms that do not fulfill duration criteria or show the number of symptoms necessary to make the *DSM III-R* (1987) or *DSM IV* (1994) diagnosis of MDD but nonetheless cause significant medical, functional, and social impairment (Broadhead, Blazer, George, & Tse, 1990; Mossey, Mutran, Knott, & Craik, 1989; Wells et al., 1989). Minor depression, also known as *subthreshold*, *subdysthymic*, *subsyndromal*, and *clinically significant* depression, is two to four times more common than MDD in older adults. In research, various classifications for minor depression have been used, including the *DSM-III-R* (1987) categories of dysthymic disorder, adjustment disorder with depressed mood, uncomplicated bereavement, organic mood disorder, or depressive disorder not otherwise specified, as well as the RDC category of minor depression (Spitzer, Endicott, & Robins, 1978). The exact number of depressive symptoms in each of these categories is less well defined, and symptom overlap often exists among the various disorders. Although the current *DSM-IV* (1994) now contains a specific category for minor depression defined by fewer than the five symptoms required for a diagnosis of MDD and of the same duration, there remains a lack of consensus on the exact characterization of minor depression because of the many different constructs and syndromes it subsumes (Koenig & Blazer, 1996).

Diagnostic Dilemmas of Somatic Symptoms

The somatic symptoms pathognomonic to depression such as fatigue, weight loss, anorexia, sleep disturbance, and psychomotor slowing are often difficult to distinguish from the somatic symptoms secondary to acute medical illness and its treatment (Koenig, Cohen, Blazer, Rama-Krishnan, & Sibert, 1993). Furthermore, older adults may manifest a more somatic presentation of their depression or may experience many somatic symptoms as part of common aging processes (Blazer, 1989). Diagnostic criteria that include somatic items or other indicators of physical health and well-being, especially criteria for MDD, may be less specific for diagnosing depression in an older, medically ill, hospitalized population (Koenig, Meador, Cohen, & Blazer, 1988a). Several investigators subse-

quently have recommended that the diagnosis and measurement of depression in the medical setting should be based primarily on cognitive and affective symptoms (depressed mood, anhedonia, suicidal thoughts, and feelings of failure) to the exclusion of somatic items (Cavanaugh, Clark, & Gibbons, 1983; Rapp, Parisi, Walsh, & Wallace, 1988; Rapp & Vrana, 1989; Schein & Koenig, 1994). Conversely, Koenig et al. (1993) and Schliefer et al. (1989) reported that somatic symptoms may help distinguish those medically ill patients with MDD from those without, but these features are poorly correlated with minor or less severe depressions.

Before the development of the *DSM-III-R* in 1987, little attention was given to the cause of a person's depression, specifically the contribution of acute medical illness. In addition, clear and consistent rules on how to make such distinctions or when to count somatic symptoms toward the diagnosis of depression were not provided. The current *DSM-IV* (1994) now gives explicit instructions on when to count symptoms toward the diagnosis of depression, i.e., symptoms that are fully accounted for by the physiological effects of medical illness are not included in the diagnosis. Debate continues regarding the utility of an "inclusive" versus "etiological" approach when assessing for depression in hospitalized, medically ill, older adults, or whether clinicians, using standardized clinical interviews, can reliably make etiological determinations in this population. Koenig, Pappas, Holsinger, and Bachar (1994) recently reported that the strict inclusive and other diagnostic schemas for counting symptoms toward the diagnosis of depression in hospitalized, medically ill, older adults were found to have only marginal, if any, benefit over the current *DSM-IV* etiological approach, although systematic examination of the different approaches is limited.

Unstructured and Structured Psychiatric Interviews

In two prevalence studies of depression in hospitalized, medically ill, older adults, unstructured psychiatric clinician evaluations were performed with use of criteria from the *DSM-III-R* and the earlier *DSM-III* to assign psychiatric diagnoses of depression (Cheah & Beard, 1980; O'Riordan et al., 1989). The disorders identified included MDD as well as other depression categories for less severe or minor depression. Neither of these studies

excluded physical symptoms that could be attributed to the medical illness. In conducting research, a disadvantage of the unstructured psychiatric interview is that it must be performed by a qualified expert familiar with various degrees of psychopathology and skilled in psychiatric interviewing and diagnostic processes.

The Schedule for Affective Disorders and Schizophrenia (SADS), a semistructured interview that yields RDC diagnoses, is the most widely used diagnostic instrument in depression research with hospitalized, medically ill, older adults (Endicott & Spitzer, 1978). The SADS involves ratings of numerous psychiatric symptoms, including all of the somatic and nonsomatic cardinal and associated depressive symptoms occurring over a 1- to 2-week period. Most versions of the SADS contain numerous rating scales of individual items of psychopathology, but the full criteria for the *DSM-III-R* (1989) disorders, including a category for minor depression, do not appear in the SADS instrument itself; thus, the interviewer must consult the criteria after completion of the interview. As with the unstructured interviews, the most suitable personnel for administering the semistructured SADS are individuals with skills in interviewing and making judgments about manifest psychopathology. In two studies of older, hospitalized, medically ill patients, an etiological approach to counting symptoms of major and minor depression with use of the SADS was employed (Kitchell, Barnes, Veith, Okimoto, & Raskind, 1982; Rapp, Parisi, Walsh, & Wallace, 1988). Symptoms were counted toward a diagnosis of depression only if they could not be attributed to the patient's medical condition. Often, the basis for distinguishing between symptoms related to depression or to medical illness were not clearly specified, potentially reducing the reliability of this approach.

Rapp and Vrana (1989) examined the sensitivity and specificity of the SADS when substituting four nonsomatic symptoms (tearfulness, social withdrawal, pessimism, and lack of reactivity) for four somatic symptoms (appetite change, sleep problems, fatigue, and reduced concentration) when diagnosing major and minor depression with use of the SADS in a sample of older, hospitalized, medically ill patients. The study showed that the substitutive approach was similar in reliability to the traditional approach in diagnosing major depression in hospitalized, medically ill patients, with a sensitivity of 87% and a specificity of 96%. Misclas-

sifications were primarily of patients with minor depression, which is the classification or category that remains the most ambiguous. Further research to date has not replicated this approach.

The National Institutes of Health Diagnostic Interview Schedule (DIS), a highly structured interview designed to make psychiatric diagnoses based on the *DSM-III* and the RDC, is widely used in psychiatric research (Endicott & Spitzer, 1978; Robins, Helzer, Croughan, & Ratcliff, 1981) and also has been validated for use in medically ill patients (Goli & Shelp, 1989). Because of its completely structured format, it does not allow for clinical judgment in the conduct of the interview or in the final diagnostic decisions. However, because the symptoms of depression assessed by the DIS must not be explainable as resulting from medical illness, this method also relies on the judgment of the interviewer to some degree. This interview also presents parameters for designation of a minor depression category. Its unique advantage over other clinician-administered diagnostic interviews is that it is designed for use by intensively trained lay interviewers either through face-to-face or telephone interviews; therefore, it is more economical for large scale studies. Koenig, Meador, Cohen, and Blazer (1988) and Koenig, Meador, Shelp, Goli, Cohen, and Blazer (1991) reported consistent prevalence rates of MDD and minor depression in samples of hospitalized, medically ill, older adults with use of the DIS. Furthermore, in a recent study with a homogeneous sample of older, hospitalized, congestive heart failure patients (Freedland et al., 1991), a modified version of the DIS was used to measure the point prevalence of MDD. The specific modifications were not explicated in this report, nor were the effects of these changes determined. Prevalence rates of minor depression also were not ascertained.

The Structured Clinical Interview for *DSM* diagnoses (SCID) is the newest semistructured interview for assigning psychiatric diagnoses (Spitzer, Williams, Gibbon, & First, 1992). It is usually administered by a clinician, preferably with experience in psychiatric interviewing and making judgments about psychopathology. It is considered more clinician friendly than other structured diagnostic interviews because of several features: separate diagnostic modules that allow for eliminating irrelevant diagnoses, a decision-tree interview structure, an etiological approach toward counting symp-

toms toward a diagnosis of depression, and inclusion of actual *DSM* criteria that are immediately available to the clinician as they conduct the interview. The SCID also includes an overview section and encourages follow-up questions based on clinical judgment. Thus, reliability of the SCID may be compromised by variations in interviewing skills and style. To date, only one study used the SCID depression or mood disorders module to assess depression in older hospitalized patients (Mossey, 1994). She found a 7% prevalence of MDD and a 23% prevalence of subdysthymic depression or depressive symptoms that did not meet criteria for MDD. Because this study preceded the publication of the *DSM-IV* manual (1994), individuals were not subclassified according to whether they did or did not meet criteria for *DSM-IV* minor depression.

DEPRESSION RATING SCALES: DIMENSIONAL MEASURES

Examiner-Rated Scales

The Hamilton Rating Scale for Depression (HRS) is the most well known, extensively used, examiner-rated depression scale devised for use with patients already diagnosed as suffering from a depressive illness (Hamilton, 1960). The HRS is used to quantify the results of a psychiatric interview, and its value depends entirely on the skill of the interviewer eliciting the necessary information. It has been used extensively to measure the severity of depressive symptoms in research on psychiatric, medical, and geriatric populations. The maximum possible score is 52, with a rating of 30 or more indicating severe depression. In general, a cut-off score of 16 to 18 and above is used to designate clinically significant depressive symptoms in hospitalized, medically ill elders. Somatic and behavioral features of the HRS account for at least 50% of the total possible score. The HRS frequently has been used to measure the severity of depressive symptoms in several studies examining the prevalence of depression in hospitalized elders (Koenig et al., 1988; Koenig et al., 1991). The HRS measures symptoms consistent with *DSM-III* criteria as well as features of depression thought to be more common in later life, i.e., decreased guilt, decreased capacity to care for oneself, hypochondriasis, and somatic complaints. This rating scale also requires that clinicians make a medical judgment regarding the cause of depressive symptoms,

giving less emphasis to symptoms judged to be caused by medical illness. For some analyses, scores on somatic items of the HRS thought to be caused by the medical illness have been adjusted by investigators, but the effect of this adjustment was not determined.

The Montgomery-Asberg Depression Rating Scale (MADRS) is an observer-rated scale that also depends on the subjective and objective impressions of the interviewer (Montgomery & Asberg, 1979). The maximum score is 59, with a score of 17 or greater indicating clinically significant depressive symptoms. Although somatic items are included, the MADRS is more dependent on psychological symptoms and, thus, is less likely to be confounded by physical complaints resulting from medical illness. Only one study used this scale to measure the severity of depressive symptoms in an older, medically ill, hospitalized population (Koenig, Meador, Cohen, & Blazer, 1988). The scores of the MADRS in this report also were adjusted specifically for the somatic symptoms thought to be caused by the patient's medical illness; again, the effect of this adjustment was not ascertained.

Self-Report Scales

The Geriatric Depression Scale (GDS) is a 30-item self-report scale that is specifically designed to measure the number of depressive symptoms in older adults (Yesavage, Brink, Rose, Lum, Huang, Adey, & Leirer, 1983). The GDS has several advantages when used with hospitalized, older adults that include binary response options that make it easily comprehended by older adults; short completion time; a limited number of potentially confounding somatic symptoms; validation in hospitalized, medically ill, older adults; more features characteristic of late-life depression as compared to other rating scales; and high positive correlations with other depression rating scales including the examiner-rated HRS and the Zung Self-Rating Depression Scale (Hamilton, 1960; Yesavage et al., 1983; Zung, 1965). The GDS has also been shown to be a valid measure of depressive symptoms in older patients with mild to moderate cognitive impairment (O'Neill, Rice, Blake, Walsh, & Oakley, 1992). Reliability estimates of the GDS showed high internal consistency (Cronbach's $\alpha = .94$). Using the GDS, investigators classified patients as severely depressed (21-30), depressed (11-20), or not depressed (0-

10). As reported by Yesavage (1983), the construct validity of the GDS was supported by evidence that known groups of normal, depressed, and severely depressed elders had significantly different GDS scores, ordered as expected. The GDS is the self-report scale that has been most extensively studied and used in research with hospitalized, medically ill, older adults (Koenig et al., 1988a; Mossey, 1994; O'Riordon et al., 1989; Rapp, Parisi, Walsh, & Wallace, 1988). In these reports, cut-off scores for more severe depression ranged from 11 to 14, although 11 or greater was most frequently used. A GDS score of 11 or greater is associated with a 92% sensitivity as well as an 89% specificity for major depression or clinically significant depressive symptoms in hospitalized, medically ill, older adults (Koenig, Meador, Cohen, & Blazer, 1988b; Yesavage et al., 1983). Although a shorter 15-item version of the GDS is available, reports of its utility in measuring depressive symptoms in prevalence research with this population are limited (Sheikh & Yesavage, 1986). However, some investigators choose the shorter version when surveying large populations, or when the GDS is used in studies that employ an extended battery of assessment instruments, in which case brevity is important to enhance acceptability and subject cooperation (P. Parmalee, personal communication, August 11, 1997). In general, the shorter version of the GDS has not performed as well as the longer version in psychometric evaluation (Ingram, 1996; Alden, Austin, & Sturgeon, 1989).

The Center for Epidemiological Studies Depression Scale (CES-D) is a 20-item self-report scale used extensively to measure the severity of depressive symptoms in epidemiological research with clinical and community samples of older adults (Radloff, 1977). The CES-D has shown high internal consistency reliability, acceptable test-retest stability, and good construct validity in these populations (Radloff, 1977). Its psychometric properties in hospitalized, medically ill, older adults is less well known. Scores range from 0 to 60, with a cut-off score of 16 or greater distinguishing those with a high probability of major depression. Some authors suggested raising the cut-off point on the CES-D in medically ill samples to enhance specificity for detection of major depression (Schulberg et al., 1985; Weissman et al., 1977). Although raising the cut-off point may improve the scale's ability to predict MDD, this adjustment may diminish sensi-

tivity for detection of minor, but clinically significant, depression (Shulberg et al., 1985). This scale contains four subscales: general physical well-being, psychomotor retardation, depressed affect, and interpersonal functioning. Schein and Koenig (1994) recently proposed that scores on the psychomotor retardation and general physical well-being scales can contribute to false-positive ratings and, therefore, are less useful in measuring depression in hospitalized, medically ill elders. Further validation of this scale in hospitalized, acutely ill, older adults is needed. Some older, acutely ill, patients may find it difficult to comprehend the Likert scoring format of the CES-D; however, this scale also can be administered by a clinician without major changes in sensitivity and specificity (Radloff, 1977). The CES-D has been used with a cut-off score of 16 in one study examining depression in hospitalized elders recovering from nonelective hip surgery (Mossey, Mutran, Knott, & Craik, 1989). In particular, this is one of few studies where depression was examined longitudinally and in relation to postoperative functional status as well as other recovery outcomes.

The Beck Depression Inventory (BDI) is a 21-item self-report scale designed to measure number and severity of affective, cognitive, and somatic features of depression. It also contains a Likert scale format that may be confusing to older patients. Seven of the 21 items (33%) are somatic symptoms that may be easily confused with medical illness and result in false-positive scores. Several studies have shown that the affective and cognitive items of the BDI (Psychological Subscale) are better discriminators of depression severity as compared to the somatic items. (Cavanaugh, Clark, & Gibbons, 1983; Rapp, Parisi, Walsh, & Wallace, 1988). BDI scores range from 0 to 64. Although a conventional cut-off score of 18 to 21 or greater was recommended to distinguish those medically ill patients with a severe depression (Cavanaugh et al., 1983), these cut-off scores were found to be less sensitive to detection of minor depression. Subsequently, Rapp et al. (1988) reported that a lower cut-off score of 10 on the BDI was sensitive for detection of moderate to severe depression in hospitalized, medically ill, older patients. To date, the use of this cut-off score in prevalence research on this population is limited. Rapp et al. (1988) also reported that a cut-off score of 5 on the Psychological Subscale of the BDI

(items 15-21) had a sensitivity of 70% and a specificity of 84% for MDD in hospitalized, medically ill, older adults. Furthermore, the psychological items of the BDI contain several items thought to be characteristic of depression in late life, i.e., decreased guilt, loss of self-esteem, and decreased sense of life-long accomplishments.

The Zung Self Rating Depression Scale (SDS) is a widely used self-report rating scale that has been well validated in younger patients (Zung, 1965). The 20-item scale has also received widespread use in research, including use with older adults. It includes both somatic, psychological, and affective symptoms. Somatic and behavioral symptoms can contribute to up to 50% of the total score. Patients are asked to rate the frequency rather than severity of depressive symptoms. The range of scores is 0 to 80. Although a cut-off score of 50 or greater is considered indicative of major depression, Kitchell, Barnes, Veith, Okimoto, and Raskind (1982) recommended that, for research purposes, a higher cut-off score would ensure greater specificity for major depression. Again, this approach also may decrease its sensitivity for detecting minor, but clinically significant, depression. Use of an adjusted cut-off score of 60 and over provided an 87% specificity for major depression in their study with older hospitalized medical patients (Kitchell, Barnes, Veith, Okimoto, & Raskind, 1982). A score of 20 or less indicates the absence of clinically significant depressive symptoms. The Zung SDS has been used in two prevalence studies of depression in hospitalized elders (Kitchell et al., 1982; Magni, Diego, & Schifano, 1985). It can be completed within a short time period, but the graded response format may be confusing for some elders.

The 15-item Popoff Index of Depression (Popoff ID) and the 12-item Brief Carroll Depression Rating Scale (BCDRS) are two short self-report measures of depressive symptoms that have been validated in older, hospitalized, medically ill patients (Kitchell et al., 1982; Koenig et al., 1988). Although used less frequently in research, both contain a brief response format and a low somatic item content and appear to hold the most promise as simple depressive symptom screening measures in the clinical setting (Duke University, 1986; Popoff, 1969). With use of a cut-off score of 10, the specificity of the Popoff ID for detection of severe depressive symptoms in hospitalized, medically ill, older adults was 87% (Kitchell et al., 1982). The

Table 1. Prevalence Studies of Depression in Older Adults in Acute Care Medical Settings

Author	Mean age (yr)	n	Diagnostic Method	Findings
Cheah & Beard, 1980	70	262	Unstructured psychiatric interview	31.3% dysphoria/depression 7% moderate-severe depression
Kitchell et al., 1982	68	42	Zung SDS, Popoff ID, SADS	45% MDD
Magni et al., 1985	79	178	Zung SDS, SCL-90 (Depression Factor Score)	42.13% moderate-severe depressive symptoms
Koenig et al., 1988	73.6	171	GDS, HRS, MADRS and modified DIS	11.5% MDD, 23% other depressive syndromes
Mossey et al., 1989	78.5	219	CES-D	>50% (16 or > on CES-D)
O’Riordan et al., 1989	80	111	GDS and unstructured psychiatric interview	4.5% MDD; 3.6% dysthymia; 10.8% depressive symptoms with dementia
Rapp et al., 1988	69.3	150	BDI, Zung SDS, GDS, and SADS	6% MDD; 3.3% minor depression; 6% intermittent depression
Koenig et al., 1991	86	332	DIS, HRS	13.3% MDD; 29.2% minor depression
Freedland, et al., 1991	77.8	60	DIS	17% MDD
Mossey et al., 1994	71	300	SCID and GDS	7% MDD; 16% subdysthymic depression

BCDRS, although not used in prevalence studies to date, has been shown to have high sensitivity (100%) and specificity (93%) for detecting major depression in acutely medically ill, older adults with use of a cut-off score of 6. This scale has also been found to perform well when compared to the GDS (Duke University, 1986). Magni, Diego, and Schifano (1985) also administered the 15-item Depression Factor Sub-scale (DFS) of the SCL-90, a general measure of psychological distress, to older, medically ill patients. This subscale is highly correlated with the Zung SDS, and it may be a useful screening instrument for severe depression because of its brevity and limited number of somatic items. The sensitivity of the Popoff ID, BCDRS, and the DFS for detection of less severe but clinically significant depressive symptoms requires further study.

DISCUSSION AND RECOMMENDATIONS

Epidemiological studies of depression in hospitalized, medically ill, older adults to date have used a combination of methods that include structured and unstructured psychiatric criteria-based interviews and depression rating scales, both examiner-rated and self-report (Table 1). Unstructured and structured psychiatric clinical interviews seem to have the most use in research with this population when a categorical psychiatric diagnosis of depression is required, especially MDD. Lengthy time periods for evaluation, the need for trained personnel, and concerns about interrater reliability are the major disadvantages of this methodological approach. Categorization of minor depression re-

mains ambiguous, resulting in the variable prevalence rates seen in the literature.

Although depression rating scales differ in their construction, most are responsive to DSM criteria, and many contain items thought to be characteristic of depression in later life. Cut-off scores for the same scales generally remained consistent across studies, and the intercorrelation between the scores with use of the various scales is high (Table 2).

Examiner-rated scales have been developed and used to quantify depressive symptom severity once a diagnosis of a depressive disorder is made. Interrater reliability issues are a concern with this type of scale. The HRS is the most frequently used examiner-rated scale in research involving this

Table 2. Cut-off Scores of Depression Rating Scales in Prevalence Studies of Hospitalized Older Adults

Scale	Study	Cut-off Score(s)
BDI	Rapp et al., 1988	≥ 11
		>5 for Psychological subscale
BCDRS	Kitchell et al., 1982	≥ 6
CES-D	Mossey et al., 1989	≥ 16
DFS	Magni et al., 1985	None cited
GDS	Rapp et al., 1988	≥ 14
	Koenig et al., 1988	≥ 11
	O’Riordan et al., 1989	≥ 11
	Mossey et al., 1994	≥ 11
	Popoff ID	Kitchell et al., 1982
Zung SDS	Kitchell et al., 1982	≥ 60
	Rapp et al., 1988	≥ 70
	Magni et al., 1985	≥ 50
HRS	Koenig et al., 1988	≥ 17
	Koenig et al., 1991	≥ 18
MADRS	Koenig et al., 1988	≥ 17

special population and has been useful in quantifying depression as a disorder. Of the two examiner-rated scales described, the MADRS contains a limited number of somatic items and may be more useful in measuring depressive symptoms in older adults with acute medical illness. Although Koenig, Meador, Cohen, and Blazer (1988) used the MADRS along with the HRS, their analysis used modified scoring of somatic items and does not permit a direct comparison of the original instruments. Furthermore, the lack of a gold standard for determining the correct attribution of somatic symptoms (i.e., because of depression or medical illness) makes it difficult to determine the true sensitivity and specificity of these scales in an older, hospitalized, medically ill population.

Self-report depression rating scales provide a time-efficient method for dimensional measurement of the presence of a broader range of depressive symptoms manifest in an older, medically ill population beyond those encompassed by diagnostic criteria for discrete depressive disorders. Their usefulness in identifying depression as a categorical disorder is limited. However, through the use of self-report rating scales, various levels of depressive symptoms, even in the absence of disorder, can be evaluated simultaneously with regard to their association with various patient outcome variables, e.g., medical illness severity, functional status level, recovery time from surgery, general ratings of health or life satisfaction, or other aspects of quality of life. Indeed, the findings of Wells et al. (1992) suggested that, in addition to depressive disorder classification schemas, simple counts of depressive symptoms along with functional status and other patient outcomes be used to classify minor or clinically significant depression. When these instruments are used for research requiring high specificity, cut-off scores can be increased. However, when used in clinical practice to screen for clinically significant depressive symptoms, cut-off scores usually should be set lower to maximize sensitivity.

The GDS is the self-report scale that has been most widely used in depression research with hospitalized, medically ill, older adults to measure depressive symptoms. Established psychometric properties, ease of administration, a limited number of somatic items, and validation in acutely ill as well as older adults with mild to moderate cognitive impairment, support the use of this scale in

research as well as for clinical screening in this special population. The BCRS and the Popoff ID, although validated in older, hospitalized, medically ill patients, have been used less frequently in research on this population. Difficulties may arise in completion of self-rated scales in frail, acutely ill, older adults because of visual deficits, decreased physical agility, or cognitive impairment. Most of the self-report scales, however, can alternatively be administered by the interviewer without changes in their psychometric properties.

Hospital-based studies that determine whether inclusion of somatic symptoms in a scale falsely inflates depression measurement are limited. Cognitive and affective symptoms have been identified consistently as better discriminators of clinically significant depression than somatic symptoms in an older, hospitalized, medically ill population. Therefore, the depression rating scales with a limited number of somatic items such as the GDS, the BDI Psychological Subscale, or the MADRS should be considered when measuring depression in research on this population. For those instruments and diagnostic criteria that do include somatic items, an etiological approach seems most appropriate. Given that the etiological approach necessarily relies on clinical judgment, the use of these instruments in medically ill, geriatric populations usually requires that the examiner be an experienced clinician. However, recent research has begun to suggest that the confounding effects of somatic items may not be as problematic as originally thought, especially with respect to the impact of depression on health status. By means of factor analysis, Davidson, Feldman, and Crawford (1994) found that somatic subscale scores of the CES-D were not overrepresented to the detriment of the total depression score in a sample of community-dwelling older adults with poor health and/or high levels of functional disability. Moreover, Parmalee and colleagues (1998) reported the results of a factor analysis that showed a cross-sectional association of depressed mood and somatic symptoms with functional health variables; but depressed mood was the only independent predictor of decline in health and function over time. The authors suggested that concerns about the confounding role of somatic symptoms in the association of depression with physical health are unfounded. Furthermore, these two studies show the potential utility of the use of factor analysis to explore whether the somatic items in

depression rating scales contribute disproportionately to the total symptom score in frail, older adults, or to explore the importance of the relationship of somatic symptoms to other phenomena relevant to depression, such as response to treatment. Future research is warranted to examine the potential role of somatic symptoms, not only in the measurement of depression, but also in the relationship of depression to physical health status and function, in predicting differences in treatment response or perhaps in distinguishing distinct subtypes of depression.

CONCLUSION

Depression is a common mental health problem in hospitalized, older adults. Once detected, depression in this population often is responsive to treatment. Thus, recognition of those older patients with depression has unquestionable empirical and clinical relevance. The lack of a gold standard for measurement of depression in hospitalized, medically ill, older adults will make validation of the various approaches in future nursing research a challenging task. Furthermore, in light of the poorer recovery outcomes experienced by hospitalized, medically ill, older adults with both major and minor depression, effective hospital-based case finding, evaluation, and interventions by nurses also need to be developed and implemented. For psychiatric nurses, the identification of appropriate methods for measurement of depression in this clinical population is an essential first step.

REFERENCES

- Alden, D., Austin, C., & Sturgeon, R.A. (1989). *Journals of Gerontology: Psychological Sciences*, 44, P124-P125.
- American Psychiatric Association. (1968). *Diagnostic and statistical manual of mental disorders*. Washington, DC: Author.
- American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders*. (3rd. ed. rev.). Washington, DC: Author.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders*. (4th ed.). Washington, DC: Author.
- Blazer, D.G. (1989). Depression in the elderly. *New England Journal of Medicine*, 320, 164-166.
- Broadhead, W.E., Blazer, D.G., George, L.K., & Tse, C.K. (1990). Depression, disability days, and days lost from work in a prospective epidemiologic survey. *JAMA*, 264, 2524-2528.
- Cavanaugh, S., Clark, D.C., & Gibbons, R.D. (1983). Diagnosing depression in hospitalized medical ill. *Psychosomatics*, 24, 809-815.
- Cheah, K.C. & Beard, O.W. (1980). Psychiatric findings in the population of a geriatric evaluation unit. *Journal of the American Geriatrics Society*, 28, 153-156.
- Davidson, H., Feldman, P.H., & Crawford, S. (1994). Measuring depressive symptoms in the frail elderly. *Journals of Gerontology: Psychological Sciences*, 49, P159-P164.
- Duke Depression Evaluation Schedule for the Elderly. (1986). Center for the Study of Depression in Later Life. Dept. of Psychiatry, Duke University Medical Center, Durham, NC.
- Endicott, J. & Spitzer, R.L. (1978). A diagnostic interview: The schedule for affective disorders and schizophrenia. *Archives of General Psychiatry*, 35, 837-844.
- Freedland, K.E., Carney, R.M., Rich, M.W., Caracciolo, A., Krotenberg, J.A., Smith, L.J., & Sperry, J. (1991). Depression in elderly patients with congestive heart failure. *Journal of Geriatric Psychiatry*, 24, 59-71.
- Goli, V. & Shelp, F. (1989). Major depression and the diagnostic interview schedule: Validation in medically ill patients. *International Journal of Psychiatry in Medicine*, 19, 123-132.
- Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery, and Psychiatry*, 23, 56-62.
- Ingram, F. (1996). The short Geriatric Depression Scale: A comparison with the standard form in independent older adults. *Clinical Gerontologist*, 16, 49-56.
- Katz, I.R. (1996). On the inseparability of mental and physical health in aged persons lessons from depression and medical comorbidity. *American Journal of Geriatric Psychiatry*, 4, 1-16.
- Kitchell, M.A., Barnes, R.F., Veith, R., Okimoto, J.T., & Raskind, M.A. (1982). Screening for depression in hospitalized geriatric medical patients. *Journal of the American Geriatrics Society*, 30, 174-177.
- Koenig, H.G. & Blazer, D.G. (1996). Minor depression in late life. *The American Journal of Geriatric Psychiatry*, 4, Suppl. I, S14-S21.
- Koenig, H.G., Cohen, H.J., Blazer, D.G., Rama-Krishnan, K., & Sibert, T.E. (1993). Profile of depressive symptoms in younger and older medical inpatients with Major Depression. *Journal of the American Geriatrics Society*, 41, 1169-1176.
- Koenig, H.G., Meador, K.G., Cohen, H.J., & Blazer, D.G. (1988a). Depression in elderly hospitalized patients with medical illness. *Archives of Internal Medicine*, 148, 1929-1936.
- Koenig, H.G., Meador, K.G., Cohen, H.J., & Blazer, D.G. (1988b). Self-rated depression scales and screening for major depression in the older hospitalized patient with medical illness. *Journal of the American Geriatrics Society*, 36, 699-706.
- Koenig, H.G., Meador, K.G., Shelp, F., Goli, V., Cohen, H.J., & Blazer, D. (1991). Major depressive disorder in hospitalized medically ill patients: An examination of young and elderly male veterans. *Journal of the American Geriatrics Society*, 39, 881-890.
- Koenig, H.G., Pappas, P., Holsinger, T., & Bachar, J. (1994). Assessing strategies for diagnosing depression in hospitalized elderly medical patients: How well can clinicians determine the etiology of symptoms? *Gerontologist Abstracts*, 34, 237.

- Magni, G., Diego, D., & Schifano, F. (1985). Depression in geriatric and adult medical inpatients. *Journal of Clinical Psychology, 41*, 337-344.
- Montgomery, S.A. & Asburg, M. (1979). A new depression scale designed to be sensitive to change. *British Journal of Psychiatry, 134*, 382-389.
- Morrison, M.F. & Kastenber, J.S. (1997). Differentiation of secondary from primary mood disorders: Controversies and consensus. *Seminars in Clinical Neuropsychiatry, 2*, 232-243.
- Mossey, J.M. (1994). Subsyndromal depression in the hospitalized elderly: A typical reaction to being sick and hospitalized? *Gerontologist Abstracts, 34*, 237.
- Mossey, J.M., Mutran, E., Knott, K., & Craik, R. (1989). Determinants of recovery 12 months after hip fracture: The importance of psychosocial factors. *American Journal of Public Health, 79*, 279-286.
- O'Neil, D., Rice, I., Blake, P., Walsh, B., & Oakley, D. (1992). The geriatric depression scale: Rater-administered or self-administered? *International Journal of Geriatric Psychiatry, 7*, 511-515.
- O'Riordan, T.G., Hayes, J.P., Shelley, R., O'Neill, D., Walsh, B., & Oakley, D. (1989). The prevalence of depression in an acute geriatric medical assessment unit. *International Journal of Geriatric Psychiatry, 4*, 17-21.
- Parmalee, P.A., Lawton, M.P., & Katz, I.R. (1998). The structure of depression among elderly institution residents: Affective and somatic correlates of physical frailty. *Journals of Gerontology: Medical Sciences, 53A*, M155-M162.
- Popoff, L. (1969). A simple method for diagnosis of depression by the family physician. *Clinical Medicine, 76*, 24-27.
- Radloff, L.S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Journal of Applied Psychological Measures, 1*, 385-401.
- Rapp, S.R., Parisi, S.A., Walsh, D.A., & Wallace, C.E. (1988). Detecting depression in elderly medical inpatients. *Journal of Consulting and Clinical Psychology, 56*, 509-513.
- Rapp, S.R. & Vrana, S. (1989). Substituting nonsomatic for somatic symptoms in the diagnosis of depression in elderly male medical patients. *American Journal of Psychiatry, 146*, 1197-1199.
- Robins, L.N., Helzer, J.E., Croughan, J., & Ratcliff, K.S. (1981). National Institutes of Mental Health Diagnostic Interview Schedule its history, characteristics, and validity. *Archives of General Psychiatry, 38*, 381-389.
- Schein, R.L. & Koenig, H.G. (1994). CES-D assessment of geriatric depression in medically ill patients. *Gerontologist Abstracts, 34*, 237.
- Sheikh, J.I. & Yesavage, J.A. (1986). Geriatric depression scale (GDS) recent evidence and development of a shorter version. *Clinical Gerontologist, 5*, 165-173.
- Schleifer, S.J., Macari-Hinson, M.M., Coyle, D.A., Slater, W.R., Kahn, M., Gorlin, R., & Zucker, H.D. (1989). The nature and course of depression following myocardial infarction. *Archives of Internal Medicine, 149*, 1785-1789.
- Shulberg, H.C., Saul, M., McClelland, M.A., Ganguli, M., Christy, W., & Frank, R. (1985). Assessing depression in primary and psychiatric practices. *Archives of General Psychiatry, 42*, 1164-1170.
- Spitzer, R.L., Endicott, J., & Robins, E. (1978). Research and Diagnostic Criteria: Rationale and reliability. *Archives of General Psychiatry, 35*, 773-782.
- Spitzer, R.L., Williams, J.B., Gibbon, M., & First, M.B. (1992). The structured clinical interview for DSM-III-R (SCID). *Archives of General Psychiatry, 49*, 624-629.
- Weissman, M.M., Sholomskas, D., Pottenger, M., Prusoff, B.A., & Locke, B.Z. (1977). Assessing depressive symptoms in five psychiatric populations: A validation study. *American Journal of Epidemiology, 106*, 202-214.
- Wells, K.B., Burnam, N.A., Rogers, W., Stewart, A., Hays, R.D., & Daniels, M. (1992). The course of depression in medical outpatients: Results from the medical outcomes study. *Archives of General Psychiatry, 49*, 788-794.
- Wells, K.B., Stewart, A., Hays, R.D., Burnam, A., Rogers, W., Daniels, M., Berry, S., Greenfield, S., & Ware, J. (1989). The functioning and well-being of depressed patients results from the medical outcomes study. *JAMA, 262*, 914-919.
- Yesavage, J.A., Brink, T.L., Rose, T.L., Lum, O., Huang, V., Adey, M., & Leier, V.O. (1983). Development and validation of a geriatric depression scale: A preliminary report. *Journal of Psychiatric Research, 17*, 37-49.
- Zung, W. (1965). A self-rating depression scale. *Archives of General Psychiatry, 12*, 63-69.