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Towards a new conceptualization of depression in older adult cancer patients: a review of the literature

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Abstract

Objectives—Identifying depression in older adults with cancer presents a set of unique challenges, as it combines the confounding influences of cancer and its treatment with the developmental changes associated with aging. This paper reviews the phenomenology of depression in older adults, and individuals diagnosed with cancer.

Method—PsychInfo, PubMed, Web of Science, and Google Scholar databases were searched for English-language studies addressing the phenomenology, symptoms, or assessment of depression in older adults and those with cancer.

Results—The Diagnostic and Statistical Manual for Mental Disorders (DSM) criteria that appear to be relevant to both older adults and cancer patients are anhedonia, concentration difficulties, sleep disturbances, psychomotor retardation/agitation, and loss of energy. Possible alternative criteria that may be important considerations included constructs such as loss of purpose, loneliness, and irritability in older adults. Among cancer patients, tearfulness, social withdrawal, and not participating in treatment despite ability to do so were identified as potentially important symptoms.

Conclusions—Current DSM criteria may not adequately assess depression in older cancer patients and alternative criteria may be important to inform the understanding and identification of depression in this population. Enhancing diagnostic accuracy of depression is important as both the over-diagnosis and under-diagnosis is accompanied with significant costs. Thus, continued research exploring the phenomenology and identifying effective indicators of depression in older cancer patients is needed.

Keywords

depression; cancer; assessment; psycho-oncology

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Disclosure statement

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Introduction

The ‘graying’ of America is by now widely recognized. Estimates of the US population indicate that by 2030 the percentage of Americans over age 65 will increase from 13% to 20%, and the percentage over age 85 will increase from 1.8% to 4.6% (Federal Interagency Forum on Aging-Related Statistics, 2012). This increase in the number of older adults will, of course, result in an ever growing number of older cancer patients. Moreover, the presence of cancer places older adults at a significantly higher risk for developing depression, particularly given the high prevalence of depression in elderly (over 65 years old) adults (17%–25%; Holland & Evcimen, 2007; Mohile et al., 2011). Given the size of this population, the importance of understanding, measuring and intervening with depressed older cancer patients is critical.

Depressive symptoms, whether isolated or severe, are associated with decreased quality of life, significant deterioration in physical activities, relationship difficulties, and greater pain among both cancer patients and older adults (Fiske, Wetherell, & Gatz, 2009; Hopko et al., 2008). Depression can also interfere with an individual’s ability to cope effectively with the problems they encounter (Nezu, Nezu, Felgoise, McClure, & Houts, 2003). Among cancer patients, the presence of depression is associated with longer hospital stays, more rapid disease progression, and higher mortality (Balentine, Hermosillo- Rodriguez, Robinson, Berger, & Naik, 2011; Giese-Davis, Collie, Rancourt, Neri, Kraemer, & Spiegel, 2011; Satin, Linden, & Phillips, 2009). Similarly, depression in older adults is associated with increased service utilization, morbidity, and premature mortality (Alexopoulos et al., 2002; Chapman, & Perry, 2008). Despite the high prevalence and deleterious effects of depression, older adults are far less likely to be accurately diagnosed with depression compared to other age groups (Alexopoulos et al., 2002). The failure to recognize depression in older adults is in part because older adults are less likely than younger adults to report some of the classic symptoms of depression, such as sadness, whereas other symptoms may be simply due to normal aging (e.g., fatigue, sleep disturbance, diminished appetite; Passik & Lowery, 2011). Moreover, normal age-related physical changes and the high prevalence of medical comorbidity contribute to the complication of accurate depression assessment in older adults (Fiske et al., 2009).

The presence of cancer also complicates the ability of clinicians to accurately identify depressive symptoms (Cavanaugh, Clark, & Gibbons, 1983; Simon & Von Korff, 2006; Weinberger, Roth, & Nelson, 2009). Indeed, the diagnostic complications due to cancer are likely more pronounced than in many common or life-threatening illnesses given the toxicity of treatments, the frequent stigma associated with cancer (e.g., for potentially avoidable cancers such as lung or skin cancer), and the frequent fear of pain, disfigurement or even death (e.g., Gonzalez & Jacobsen, 2012; Lebel & Devens, 2008; Passik, Kirsch, Rosenfeld, McDonald, & Theobald, 2001). The primary source of this difficulty lies in the overlap between the diagnostic criteria for depression (Table 1), as detailed in the Diagnostic and Statistical Manual for Mental Disorders (DSM; American Psychiatric Association, 2013), and the symptoms often attributable to cancer and/or the side effects of treatment (Guo et al., 2006; Kathol, Mutgi, Williams, Clamon, & Noyes, 1990; Passik & Lowery, 2011). The same symptoms may arise from depression, from the cancer itself, from treatment side effects, or

from some combination of the three (Koenig, George, Peterson, & Pieper, 1997; McDaniel, Musselman, Porter, Reed, & Nemeroff, 1995). Identifying depression in older cancer patients presents an even greater challenge, as it combines both the difficulty of diagnosing depression in cancer patients generally with the complexities rooted in the aging process (e.g., general aches and pains, changes in sleep, feeling slowed down; Weinberger et al., 2009). Some have argued that depressive symptoms are often overlooked in older cancer patients, and as a result may go untreated (Extermann & Hurria, 2007). However, without a clear understanding of the phenomenology of depression in older cancer patients – and whether this phenomenon differs from the prototypical manifestation of depression in younger, physically healthy adults, the ability of clinicians to identify and quantify depression in this population will remain uncertain. Additionally, accurate assessment of depression in older cancer patients is required to optimize the ability of researchers and clinicians to develop and implement effective treatments for this growing population. The aim of this review is to explore the unique features of depression in older adults with cancer. However, because no published research has systematically analyzed psychological distress in older cancer patients, we have extrapolated from two separate research literatures, one focused on geriatric depression in healthy adults and one focused on the phenomenology of depression in patients with cancer. Based on this review, unique features that might be germane to depression in each group, but are not included in the current diagnostic criteria, are identified.

Method

We conducted a literature search within three electronic databases: PsychInfo, PubMed, and Web of Science. Google Scholar was also searched. The following search terms were used: ‘depression assessment and (cancer, geriatric, older adult),’ ‘phenomenology of depression and (cancer, geriatric, older adult),’ ‘Endicott depression criteria,’ and ‘Cavanaugh depression criteria.’ Searches were conducted from January 1980 up to January 2014. Articles and book chapters were also identified by a manual search of references from all articles that were reviewed. Any published source that addressed the phenomenology, symptoms, or assessment of depression in older adults or patients with cancer was included provided it was written in English. Studies related to prevalence rates or determining appropriate cut-off scores on a specific measure of depression were only included in this review if they specifically addressed the adequacy of assessment techniques and/or alternative criteria. The symptoms and putative diagnostic criteria were analyzed separately for those symptoms best categorized as cognitive or affective versus the somatic or vegetative symptoms of depression (Beck, 1997). In addition, the review of relevant literature was conducted separately for research drawn from the geriatric samples versus those drawn from cancer and psychooncology settings. Representative meta-analyses were also included if deemed relevant. No studies included in the meta-analyses were cited in this review paper, in order to prevent over-representation of the existing evidence. In synthesizing the results of this narrative review, distinctions were made between relevant existing DSM criteria and those emergent constructs that appeared to have potential significance for reconceptualizing depression in this unique clinical sample.

Database searches yielded 16,765 citations; 2,205 were duplicates (i.e., were labeled 'Trash' by EndNote). Titles were read and 369 full papers were selected and obtained, of which 90 were included in the review. This included searches of Google Scholar and relevant citations from included papers. The primary reasons for exclusion of a citation were focus on treatment only, non-cancer illness, and commentaries or reviews with significant conceptual overlap with another citation but no new empirical data.

Results

Depression in older adults

The prevalence of major depressive disorder (MDD) ranges between 1% and 5% of community-dwelling older adults and up to 42% of older adults residing in long term care facilities (Fiske et al., 2009; Luppá et al., 2012). Depression can emerge in late life due to a confluence of factors such as bereavement, illness, and/or changing neurobiology (Fiske et al., 2009). Despite its elevated prevalence, depression is not a normal part of aging and is often amenable to intervention through psychotherapy, medication, or both (Akincigil et al., 2011; Ellison, Kyomen, & Harper, 2012). The spectrum of depressive disorders is also important to consider when assessing for depression in older adults; between 15% and 36% of community-dwelling older adults endorse subthreshold, though clinically significant depressive symptoms (Blazer, 2009; Luppá et al., 2012). For many older adults, even less severe forms of depression (e.g., minor, subsyndromal, or subthreshold depression, dysthymia, or adjustment disorder with depressed mood) can create significant impairment and decreased quality of life (Blazer, 2009).

Symptom presentation

Several authors contend that current DSM criteria may underestimate depression in older adults based on its emphasis on depressed mood as a gateway symptom (Gallo, Anthony, & Muthén, 1994; Jeste, Blazer, & First, 2005). For example, Gallo and colleagues (Gallo, Rabins, Lyketsos, Tien, & Anthony, 1997) characterized depression in older adults as 'depression without sadness,' noting that depressed older adults manifest irritability or withdrawal more often than dysphoric mood. These authors described non-dysphoric depression as a syndrome that includes apathy, anhedonia, fatigue, sleep disturbances, and other somatic symptoms. Despite a lower prevalence of affective and cognitive symptoms in depressed older adults, Gallo et al. (1997) concluded non-dysphoric depression is no less likely than more classic MDD symptoms to generate significant distress, functional disability, and mortality in older adults.

Another potentially important symptom of depression in older adults is loneliness. Loneliness has been linked closely to depressed mood, general well-being, and even mortality (Stek, Vinkers, Gussekloo, Beekman, van der Mast, & Westendorp, 2005). Moreover, the presence of social support tends to buffer older adults from depression (Hatfield, Hirsch, & Lyness, 2012). In a large study of community-dwelling older adults, the presence of loneliness decreased the likelihood that the adults would characterize themselves as 'happy' (Odds Ratio [OR] = 0.29) or satisfied with life (OR = 0.34). Additionally, the Population Attributable Risk (PAR; a measure of the effect size of loneliness on the risk for

depression) in this elderly sample was 61% (Golden et al., 2009). A large study of older Japanese adults ($N = 10,969$) also found strong relationships between the incidence of depressive symptoms and 'having no one to talk to' ($OR = 5.0$; Kaji et al., 2010), although they defined 'older' as age 50 or greater. These authors also found that depression in older adults was associated with 'loss of purpose in life' ($OR = 2.8$) and 'having nothing to do' ($OR = 2.4$). Taken together, these findings suggest that apathy, anhedonia, and loneliness are among the most pronounced cognitive and affective symptoms of depression in older adults, while general feelings of sadness are somewhat less typical.

The heterogeneity of depression in late life is supported by recent studies of community-dwelling older adults that identified distinct latent-class subtypes of depression (Lee, Leoutsakos, Lyketsos, Steffens, Breitner, & Norton, 2012; Mora et al., 2012). Lee et al. (2012) identified three subgroups of depressed older adults: those with high levels of virtually all depressive symptoms (62%), those with some elevated symptoms but a low probability of endorsing all depressive symptoms (21%), and a subgroup with primarily somatic symptoms such as psychomotor changes, sleep disturbances, and fatigue (17%). In another study of community-dwelling older adults ($N = 420$), four distinct patterns of depression symptoms emerged: low depression symptoms (68%), high depression symptoms (5%), subthreshold depression with anhedonia but few somatic complaints and low levels of negative affect and negative interpersonal feelings (18%), and subthreshold depression with somatic complaints, anhedonia and negative interpersonal feelings (9%; Mora et al., 2012). Given the heterogeneity of depressive symptoms, the authors also underscored the need for clinicians to consider diverse presentations when assessing depression in older adults (Lee et al., 2012; Mora et al., 2012).

A number of research studies were identified that directly compared the symptom presentation in depressed older and younger adults. For example, in a sample of community dwelling older adults (i.e., 65 years or older), excessive guilt and thoughts that life is not worth living were significantly less common among participants with MDD whose depression began after age 60 compared to those with who had an earlier onset of depression (Gallagher et al., 2010). Ellison et al. (2012) observed that older adults with depression, compared to depressed younger adults, are less likely to endorse crying spells, sadness, fearfulness, being bothered, or feeling that life is a failure.

A recent meta-analysis explored the phenomenology of depression in older compared to younger adults (Hegeman, Kok, van der Mast, & Giltay, 2012). They analyzed 11 studies that compared older and younger adults with depression who had been rated using the Hamilton Depression Rating Scale (HDRS; Hamilton, 1960). Compared to younger depressed adults, older depressed adults tended to experience more psychomotor agitation ($OR = 1.84$), hypochondriasis ($OR = 3.13$), gastrointestinal somatic symptoms ($OR = 1.58$) and general somatic symptoms ($OR = 2.01$). Older adults had lower levels of guilt and were less likely to report a decrease in their sexual interest (Hegeman et al., 2012). These authors concluded that older depressed adults tend to exhibit more somatic symptoms and fewer cognitive and affective symptoms than younger depressed adults (see also Balsis & Cully, 2008; Husain et al., 2005).

A number of other studies, using different measurement approaches, have also identified differences in the symptom presentation of older patients with depression compared to younger adults. For example, middle insomnia (waking in the night), poor overall sleep quality, and daytime sleepiness were more common in depressed older adults compared to younger adults (Maglione et al., 2012). Fatigue and psychomotor retardation have also been identified as more prevalent in late life depression, as are disturbances in memory and concentration (Butters et al., 2004; Christensen et al., 1999). Somatic symptoms of anxiety and panic have also been identified as presenting complaints among depressed older adults, with symptoms such as heart palpitations, restlessness, dizziness, and facial flushing noted as frequent presenting problems (Gebretsadik, Jayaprabhu, & Grossberg, 2006).

Given the unique presentation of somatic and cognitive symptoms in late life depression, several variants of traditional MDD have been postulated to occur in older adults (Alexopoulos et al., 2002). For example, Alexopoulos and his colleagues (Alexopoulos, Kiosses, Klimstra, Kalayam, & Bruce, 2002; Alexopoulos, Meyers, Young, Campbell, Silbersweig, & Charlson, 1997) have described syndromes such as 'vascular depression' and 'depression-executive dysfunction syndrome' that are thought to reflect unique manifestations of geriatric depression. Both of these labels have been used to describe elderly individuals who exhibit a marked reduction in their interest in pleasurable activities, increased suspiciousness, worsening psychomotor retardation, and impaired insight, but report few feelings of guilt or worthlessness. Because these syndromes often arise in the absence of a personal or family history of depression, they have been conceptualized as having a distinct vascular etiology related to aging (i.e., structural changes in the brain). Despite these advances, further research is needed to determine whether the different phenomenology of depression between younger and older adults is reflective of unique pathophysiology, but the need to adapt assessment techniques for use with older adults appears clear.

Assessment of depression in older adults—The confounding influence of physical ailments on the identification of depression in older adults is well-established, particularly because of the inclusion of somatic symptoms in the diagnostic criteria for depression (Alexopoulos et al., 2002; Fiske et al., 2009; Spangenberg, Forkman, Brähler, & Glaesmer, 2011). A lack of energy, diminished appetite and weight loss, sleep disturbance, and concentration difficulties, although symptomatic of depression, may also be the result of co-morbid medical conditions. Accordingly, Jeste et al. (2005) argued that there is a need for age-related variations in the diagnostic criteria for depression, as well as several other mental disorders (e.g., schizophrenia, anxiety disorders, and substance use disorders). Without considering the potential impact of age on symptom presentation, older adults are at risk of being incorrectly diagnosed with depression (i.e., if features of normal aging are attributed to depression) while some genuinely depressed individuals risk being overlooked (i.e., when symptoms are mistakenly attributed to aging instead of depression).

Yesavage et al. (1983) developed the geriatric depression scale (GDS) specifically for use with older adults, and eliminated the somatic symptoms of depression that often confound the diagnosis. The GDS has been widely used in both clinical and research settings, and has been studied with nursing home residents, community-dwelling, and medically ill older

adults (Almeida & Almeida, 1999; Montorio & Izal, 1996). In addition to the original 30-item scale (which elicits dichotomous yes/no responses to a series of statements), 5-, 10-, and 15-item versions have also been developed (Almeida & Almeida, 1999). In studies of older medically ill adults, the GDS has demonstrated variable sensitivity (i.e., 65%–92%) and specificity (i.e., 89%–93%) for detecting a diagnosis of depression, typically using a cutoff score of 14 on the 30-item scale (Koenig, Meador, Cohen, & Blazer, 1988; Rapp, Parissi, Walsh, & Wallace, 1988). Factor analysis of the GDS has supported a five-factor model: sad mood, lack of energy, positive mood, agitation, and social withdrawal (Sheikh et al., 1991). Thus, the scale may help identify unique elements of the phenomenology of depression in older adults (e.g., social withdrawal).

A number of other self-report instruments have been used to assess depression in older adults including the Center for Epidemiological Studies Scale (CES-D; Radloff, 1977), the Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001), and the Zung Self-Rating Depression Scale (ZSDS; Zung, 1965). These instruments have demonstrated varying levels of psychometric support across samples and settings. Of these instruments, the psychometric properties of the CES-D, a 20-item rating scale that elicits severity ratings on a 0 to 3 scale, are the most well-established (Rao & Cohen, 2004; Steinman et al., 2007). For example, Lewinsohn, Seeley, Roberts, and Allen (1997) examined the utility of the CES-D for identifying depression in a large sample of community-dwelling older adults (age range: 50–96). They compared the psychometric properties of the CES-D in different age groups (50–59, 60–69, and 70 or older). No significant age differences were found in the prevalence rate of depression based on established cut scores (16 and 20), however, receiver-operating characteristic (ROC) curve analyses suggested that the optimal cut score (i.e., that maximized sensitivity and specificity) was 12. Of note, only two CES-D items were significantly negatively correlated with age: Item 4 ('I felt that I was just as good as other people') and Item 5 ('I felt sad').

Alternative approaches to diagnosing depression in older adults—Whereas the GDS simply omits somatic/vegetative symptoms in assessing depression severity, several alternative diagnostic approaches have also been recommended for the assessment of depression in older adults (Hendrie et al., 1995; Koenig, George, Peterson, & Pieper, 1997; Koenig, Pappas, Holsinger, & Bachar, 1995; Rapp & Vrana, 1989). Four main diagnostic approaches for identifying MDD in older adults include: inclusive, etiologic, exclusive, and substitutive. The inclusive approach considers all symptoms that are endorsed, regardless of whether the symptom might be due to age, illness or another cause. Etiologic approaches attempt to discern whether the symptom is due to depression or another cause (e.g., illness, advanced age). Exclusive approaches eliminate somatic symptoms from the diagnostic criteria all together when they are thought to be related to a given medical illness. Substitutive approaches typically replace somatic symptoms with other, non-somatic symptoms such as irritability and social withdrawal. Koenig et al. (1997) compared the prevalence and course of depression across six different approaches in a sample of hospitalized, medically ill adults ages 60 years or older ($N = 460$). Not surprisingly, the inclusive approach yielded the highest rate of depression diagnoses (21%) whereas the exclusive-etiological approach (in which the authors eliminated appetite disturbance and

fatigue from the list of nine criterion symptoms) yielded the lowest rate (10%). The etiologic approach best identified patients with high levels of impairment, whereas those identified by the inclusive approach who were ‘missed’ by the etiologic approach often had low levels of impairment. The etiologic approach also provided the strongest discrimination between individuals with major versus ‘minor’ depression.

Hendrie et al. (1995) also explored the prevalence of MDD in 125 older adults using several different diagnostic approaches in a sample of primary care patients aged 60 or older. Depression diagnoses, based on structured clinical interviews, were made according to etiologic, inclusive, and substitutive approaches (using criteria described by the Endicott, 1984; described in more detail below). They also compared these classifications to a diagnosis of MDD based on the consensus of several psychiatrists who reviewed the findings of the clinical interview (according to DSM-III-R criteria). Based on their analyses, they estimated population prevalence rates of 5.8% based on the inclusive approach, 3.7% based on the substitutive approach, and 1.8% based on the etiologic approach. However, sensitivity and specificity estimates were modest, and limited by the small number of individuals in the sample who were diagnosed by the clinicians as having MDD (3 of 125; 2.4%).

Although these studies address the impact of alternative diagnostic approaches on prevalence rates, no consensus has emerged as to which approach is ‘best.’ Indeed, selection of a diagnostic approach may hinge on the purpose of the assessment, as some approaches have better sensitivity for identifying depression in older adults, yet risk being overly inclusive. Approaches that emphasize specificity may risk overlooking minor or subsyndromal depression, even though such symptoms can often be clinically significant. Moreover, given the evidence for differences in the phenomenology of depression between older and younger adults, determining what constitutes an appropriate ‘gold standard’ is challenging.

Summary of depression criteria in older adults—The literature provides evidence that the existing DSM criteria do not fully capture the syndrome of depression in older adults. Only five of nine DSM criteria appear to be particularly distinctive in older adults, while several additional constructs emerged as potentially important symptoms for this population (see Table 2). For example, DSM symptoms of anhedonia and concentration difficulties appear to possess adequate clinical utility for diagnosing depression in older adults, but they do not appear to be the only relevant affective and cognitive symptoms. In fact, constructs such as irritability, social withdrawal, loneliness, loss of purpose in life, ‘having nothing to do’ (i.e., boredom), and memory disturbances also garnered support in the literature as significant components of the depressive picture. Some of these potentially relevant symptoms are acknowledged in the current DSM (e.g., irritability), but are not systematically integrated into the diagnostic criteria (APA, 2013). On the other hand, evidence supporting the reliability of including somatic symptoms in rendering a diagnosis of depression in older adults is mixed. In sum, any consideration of whether a new conceptualization of depression in older adults with cancer is warranted should begin with a more systematic exploration of the constructs identified in the geriatric depression literature, with particular attention towards their relevance in cancer patients.

Depression in cancer

Many of the confounds that complicate the assessment of depression that are associated with aging are even more pronounced in the context of a severe or life limiting illness such as cancer. Psycho-oncologists have long-recognized that many symptoms of depression can be a direct result of cancer or its treatment (Bukberg, Penman, & Holland, 1984; Plumb & Holland, 1981; Massie & Holland, 1990). However, interventions may differ depending on the presumed etiology of these symptoms. For example, cognitive-behavioral therapy might be used to treat insomnia in patients with a primary depression whereas sedative medications might be more useful if insomnia is due to a treatment-related side effect. Thus, distinguishing whether a patient's reported symptoms are attributable to a mood disorder or medical illness is a critical determination that impacts the nature, and even necessity of mental health intervention. This process is guided by a substantial research literature that has identified differences in the symptom presentation of depressed patients who are physically healthy versus those with cancer. Similarly, a number of studies have compared the symptom presentation of depressed versus non-depressed cancer patients. These findings are summarized below.

Symptom presentation in patients with cancer—As with older adults, the most obvious starting point in identifying overlapping symptoms are those characterized as somatic or vegetative. Although somatic symptoms such as weight loss, diminished appetite and fatigue are common among depressed patients, these symptoms can also be consequences of chemotherapy (American Cancer Society, 2015). Likewise, the pain and discomfort associated with cancer can cause sleep disturbance and concentration problems (Passik & Lowery, 2011). One approach to disentangling the influence of cancer and chemotherapy on somatic symptoms is through a comparison of depressed and non-depressed cancer patients. A handful of studies have applied this methodology, some of which have suggested a different phenomenology for somatic symptoms in the two groups.

In one such study, Chen and Chang (2004) used the Hospital Anxiety and Depression Scale (HADS; Zigmund & Snaith, 1983) to identify depressed individuals among a sample of Taiwanese adults with cancer. The HADS was specifically developed for medical settings, and eliminates all somatic and vegetative items in calculating severity scores for the total scale and its two subscales, depression (HADS-D) and anxiety (HADS-A). Chen and Chang found that patients with depression (i.e., above the cut-off score on the HADS-D) also reported significantly higher rates of insomnia, pain, anorexia, and fatigue than cancer patients without depression. Hopko et al. (2008) also compared depressed cancer patients with cancer patients that had no identifiable psychiatric diagnosis. They found significant differences in the clinical features of depression (controlling for gender) based on responses to a series of self-report and clinician-rated scales. Specifically, depressed cancer patients had lower levels of 'vitality', poorer social functioning, and higher levels of anxiety and bodily pain compared to non-depressed cancer patients. However, the authors relied on a small sample and the accuracy of their diagnostic interviews is unknown, limiting the conclusiveness of their findings. In addition, by studying a heterogeneous group of cancer patients (in terms of tumor location, stage, etc.), the role of any factors specific to cancer or its treatment may have been obscured.

Depression was also more common among cancer patients who reported high levels of fatigue compared to those with less fatigue (Rhondali et al., 2012), but such associations raise questions about circularity (i.e., is the fatigue due to depression or vice versa). In short, although several studies have indicated a significant association between somatic symptoms and depression for patients with cancer, it is often unclear whether observed somatic symptoms are due to depression or cancer (or if depression exacerbates the perceived severity of somatic symptoms that may have originated in the cancer treatment experience). Likewise, the occurrence of symptoms due to cancer or chemotherapy may certainly contribute to an individual becoming depressed.

Another approach to disentangling the cancer/depression relationship is through a comparison of depressed patients with and without cancer. Moorey and Steiner (2007) used this methodology to contrast cancer patients who had been referred for psychological services to a group of individuals referred for mental health treatment that did not have a cancer diagnosis. Not surprisingly, they found that patients with cancer, compared to those without cancer, reported more somatic symptoms of depression, but roughly equal numbers of affective (e.g., sad mood, irritability) and motivational symptoms (e.g., anhedonia, hopelessness). Cancer patients, on the other hand, had lower rates of negative self-referential symptoms such as feelings of guilt and worthlessness. The authors concluded that depression secondary to cancer does not necessarily reflect core self-esteem issues, as it often does in a physically healthy individual with depression. Instead, depressed cancer patients may be more preoccupied with the threat that cancer poses to their survival (Moorey & Steiner, 2007). However, no systematic procedure was utilized to diagnose individuals as ‘depressed’ and hence, the equivalence of the two groups is unclear.

The value of considering somatic symptoms for a depression diagnosis in cancer patients is made more complicated when considering the diversity of illness symptoms across cancer type. For example, a recent study of depressive symptoms in men with prostate cancer (Sharpley, Bitsika, & Christie, 2013) found that the mean score on a measure of somatic symptoms of MDD was the most powerful predictor of total depression scores. Somatic symptoms provided the strongest unique contribution to the prediction of an overall depressive symptom severity score, followed by scores on the anhedonia items, ‘emotional’ symptoms (feelings of worthlessness/guilt, recurrent thoughts of death/suicide), depressed mood, and other cognitive symptoms. The authors noted that because the illness-related symptoms that are specific to prostate cancer have relatively little overlap with those of MDD (i.e., urinary incontinence, impotence, bowel dysfunction), removal of somatic symptoms may actually decrease the likelihood of identifying depression (Sharpley et al., 2013). However, these results must be interpreted with caution, as each of the five subscales did not have an equal number of items. In fact, the somatic category included the most items (six), while some included only two items (i.e., the emotional and the cognitive categories), which could explain why the somatic category provided the strongest contribution to predicting total scores.

Assessment of depression in patients with cancer—Much of the research on depression in patients with cancer has utilized ‘traditional’ measurement approaches: self-report instruments and clinical interview-based tools. Of these, the only instrument

specifically tailored to the assessment of patients with cancer is the HADS, which was developed on a sample of medical outpatients. Given the complicated relationships between somatic symptoms, depression, and cancer, the omission of the somatic symptoms from the HADS has obvious appeal. However, the benefits of this approach are questionable. For example, an exploration of depression symptoms in a sample of chronically ill medical patients revealed that cognitive and affective symptoms were no more valid as ‘predictors’ of depression than were somatic symptoms such as fatigue, changes in weight or appetite, psychomotor agitation/retardation, and sleep disturbances (Simon & Von Korff, 2006). A separate study also found no benefit from omitting somatic symptoms from the assessment of depression in patients with cancer (Mitchell, Lord, & Symonds, 2012).

Studies evaluating the effectiveness of the HADS in differentiating cancer patients with and without depression have demonstrated modest levels of predictive accuracy. For example, Reuter and Harter (2001) analyzed the predictive accuracy of the HADS in identifying patients who were deemed ‘depressed’ based on a structured clinical interview (the Composite International Diagnostic Interview; Robins et al., 1988) in 188 hospitalized German cancer patients. They found an overall classification accuracy, as measured by the Area Under the Curve (AUC) from ROC curve analysis, of .80. The authors identified a total HADS score of 16 as the optimal cut-score, generating sensitivity of 79% and specificity of 76%. However, they did not report whether accuracy differed when only considering the seven depression items from the HADS (i.e., the HADS-D subscale). Slightly higher levels of predictive accuracy were reported in a meta-analysis exploring the diagnostic validity of the HADS in cancer and palliative care settings (Mitchell, Meader, & Symonds, 2010). Based on their analysis of 11 studies, the HADS-D generated a weighted sensitivity of 72% and specificity of 83%; classification accuracy was slightly better for the HADS total score (weighted sensitivity = 82%, weighted specificity = 77%). However, using the established cut-score of 8 or greater (on the HADS-D), sensitivity was only 68% whereas specificity was 86%. The authors noted that the HADS demonstrated somewhat better predictive accuracy among patients with early stage cancers (AUC = .77) compared to advanced or palliative care patients (AUC = .71), but the difference was not significant.

Despite the appeal of the HADS, the brevity of a 7-item depression scale may impede its utility in capturing the range of symptoms exhibited by depressed cancer patients. Indeed, many researchers have utilized more ‘traditional’ depression ratings scales such as the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), CES-D, and HDRS (e.g., Hann, Winter, & Jacobsen, 1999; Love, Grabsch, Clarke, Bloch, & Kissane, 2004; Olden, Rosenfeld, Pessin, & Breitbart, 2009). Several studies have described the factor structure of depression measures in patients with cancer, typically identifying distinct factors that correspond roughly to cognitive, affective and somatic/vegetative distinctions. For example, Passik et al. (2000) conducted a factor analysis of the ZSDS (Zung, 1965), in a large sample of ambulatory cancer patients receiving outpatient care. They found four distinct factors: depressed mood, cognitive symptoms, and two somatic symptom factors, one related to weight and appetite and another characterized by other somatic symptoms (e.g., fatigue, constipation). Notably, the somatic symptom factors appeared less accurate in differentiating depressed individuals compared to the cognitive and affective factors. The authors concluded that focusing on the cognitive and affective symptoms of depression when

assessing cancer patients may be more important than interpreting the somatic symptoms (Passik et al., 2000). Olden et al. (2009) explored the factor structure of the HDRS in a sample of 422 patients with terminal cancer in a palliative care hospital. Their factor analysis also revealed a 4-factor structure, but differed somewhat from those described by Passik et al. (2000). They labeled the four factors: anxiety, 'pure' depressed mood, sleep disturbances, and other somatic items (e.g., gastrointestinal symptoms). Notably, the sleep and somatic symptom factors did not significantly correlate with a diagnosis of MDD or related measures. Thus, like Passik et al. (2000), the authors suggested that given the severity of physical illness in this sample, physical symptoms may not be a good indicator of depression in the medically ill (Olden et al., 2009).

Mitchell et al. (2012) also explored the diagnostic utility of individual somatic symptoms in formulating a depression diagnosis for cancer patients. In a sample of 279 cancer patients, they found that sleep disturbances showed over 80% sensitivity and specificity for detecting the presence of a depressive disorder (including both minor and or major depression) based on the Patient Health Questionnaire (Kroenke, Spitzer, & Williams, 2001). For identifying MDD, appetite disturbances, 'feeling bad about yourself or that you are a failure,' and psychomotor retardation demonstrated the highest sensitivity (82%–89%) and specificity (80%–83%). The five symptoms demonstrating the highest clinical utility based on the AUC statistic were concentration difficulties, depressed mood, anhedonia, feeling bad about yourself or that you are a failure, and appetite disturbances (AUCs > .85). Notably, every symptom studied was more common in depressed than non-depressed patients regardless of disease stage, and only suicidal ideation generated an AUC below .70 in predicting either MDD or any depressive disorder. The authors concluded that there was no clear evidence that non-somatic (i.e., cognitive and affective) symptoms were more useful than somatic symptoms in identifying patients with depression.

Another study comparing cancer patients with and without MDD identified six symptoms measured by the HDRS that were significantly associated with an increased probability of MDD (based on the Structured Clinical Interview for DSM Disorders; First, Spitzer, Gibbon, & Williams, 2002): depressed mood, late insomnia, agitation, psychic anxiety (i.e., tension, worry, apprehension), genital symptoms (i.e., loss of libido, impaired sexual performance), and diurnal variation (Guo et al., 2006). Using these six items to differentiate patients with and without MDD generated an AUC of .93, substantially greater than the AUC for the entire 21-item HDRS (AUC = .80). The optimal cut score for these six items was a score of 6 or greater, which generated sensitivity of 81.3% and specificity of 87.5%. Thus, it appears that both somatic and cognitive/ affective symptoms may be important components of the phenomenology of depression among cancer patients and that simply eliminating somatic symptoms from consideration in assessing depression may oversimplify the assessment process.

Alternative approaches to diagnosing depression in patients with cancer—

Based on the questionable relevance of somatic symptoms in identifying depression in cancer patients, several alternative diagnostic criteria and approaches have been proposed (Cavanaugh et al., 1983; Endicott, 1984; Zimmerman et al., 2010). For example, the HADS uses what has been termed an 'exclusive' approach, by simply omitting somatic symptoms

altogether (Koenig, Pappas, Holsinger, & Bachar, 1995). Zimmerman et al. (2010) also proposed eliminating somatic symptoms (sleep disturbance, fatigue, appetite disturbance and psychomotor changes) from the diagnostic criteria and instead requiring that three of the remaining five symptoms be present in order to establish a diagnosis of MDD. However, despite the widespread use of the HADS in oncology clinical and research settings (Mitchell et al., 2010), a meta-analysis found no evidence that the HADS was superior in detecting depression in cancer patients compared to the standard DSM-IV criteria (Carey, Noble, Sanson-Fisher, & Mackenzie, 2012). In addition, several studies have found that excluding somatic symptoms from the diagnosis of depression in cancer patients results in a decreased prevalence rate for MDD (Bukberg et al., 1984; Rayner et al., 2010). Thus, the 'exclusive' approach to diagnosing depressive symptoms may under-identify patients with depression.

An alternative to the exclusive approach involves replacing the somatic symptoms of depression with cognitive, affective and/or behavioral symptoms. Several such 'substitutive' approaches to assessing depression in the medically ill have been developed, evaluated, and utilized over the past two decades (e.g., Cavanaugh et al., 1983; Endicott, 1984). One of first, and most widely cited, substitutive approaches was proposed by Jean Endicott (1984). Endicott recommended replacing the DSM-IV somatic symptoms of MDD (poor appetite or weight loss, sleep disturbance, loss of energy/fatigue, diminished concentration) with four alternative symptoms: tearfulness or depressed appearance in face or body posture; social withdrawal or decreased talkativeness; brooding, self-pity or pessimism; and 'cannot be cheered up, doesn't smile, no response to good news or funny situations' (Endicott, 1984, p. 2247). Cavanaugh et al. (1983) also recommended deletion of the same four somatic symptoms, but proposed only two replacement symptoms: not participating in medical treatment in spite of ability to do so and functioning at a lower level than the medical condition warrants or failure to progress in recovery despite improved medical condition.

Whether or not these substitutive methods actually improve accuracy in depression assessment for the medically ill is unclear. For example, Kathol et al. (1990) applied four sets of criteria for the diagnosis of depression in patients with cancer ($N = 152$). They utilized DSM-III, DSM-III-R, Research Diagnostic Criteria (RDC; Spitzer, Endicott, & Robins, 1978), and Endicott criteria. They found substantial overlap among the four classification systems, with RDC identifying fewer patients than the other systems. However, the authors concluded that replacing the DSM-III somatic symptoms with the Endicott substitution criteria had little impact. They concluded that there is no evidence that one approach is more valid than any other, and suggested that additional research is warranted in order to determine the clinical superiority of one system over another (Kathol et al., 1990).

Chochinov, Wilson, Enns, and Lander (1994) also compared the prevalence of depression in a sample of 130 cancer patients receiving palliative care based on RDC and the Endicott criteria. They found that the two methods yielded similar rates of depression when a rigorous definition of depression was utilized (analogous to MDD), but when a lower threshold was used to identify depression (i.e., including those with milder symptoms), the Endicott criteria classified fewer individuals as depressed. The authors concluded that the Endicott criteria were comparable to the standard DSM criteria for identifying severe

depression, but that the standard diagnostic criteria may over-identify non-depressed patients as having mild depression.

More recently, Akechi et al. (2009) utilized item response theory (IRT) to examine the utility of the DSM-IV criteria for MDD, the Endicott substitution criteria, and the symptoms proposed by Cavanaugh. In a sample of 728 depressed cancer patients, they found that none of the DSM-IV criteria had a high ability to discriminate between individuals with more or less severe depression. However, the Endicott and Cavanaugh criteria were among the symptoms with the most utility in assessing depression across the spectrum. The authors found that 'Fearfulness or depressed appearance' and 'brooding, self-pity, or pessimism' (both of which were suggested by Endicott) were particularly good indicators of mild depression, while 'not participating in medical care' (recommended by Cavanaugh) and 'social withdrawal' (Endicott) were good indicators of moderate to severe depression. For severe MDD, Endicott's 'cannot be cheered up...' symptom was the most salient indicator (Akechi et al., 2009).

Given this pattern of results across studies, it appears that while the recommended substitutive criteria may have the strongest discriminatory power, the actual impact on rates of MDD diagnosis is modest. However, a number of methodological confounds limit the analysis of substitutive criteria including modest sample sizes in many studies and the frequent reliance on DSM diagnostic criteria to identify individuals with 'depression.' The latter may create a circularity, in which existing diagnostic criteria are used to 'validate' diagnoses based on these same criteria. An alternative approach, in which the diagnosis of depression is made by experts who do not rely solely on DSM criteria for MDD, may be needed to accurately evaluate the utility of alternative diagnostic approaches.

Summary of depression criteria in cancer—The literature reviewed here suggests that assessing for depression in the cancer setting likely warrants inclusion of alternative criteria rather than exclusive reliance on existing DSM criteria. Although many of the DSM symptoms have received support in the literature as accurately indicating the presence of depression, several additional features also emerged as potentially being as good as or better than those traditionally used (Table 3). For example, Endicott's and Cavanaugh's criteria (e.g., tearfulness, not participating in treatment despite ability to do so) appear to represent viable alternative symptoms to be considered in the clinical picture of depression in cancer patients, while traditional somatic symptoms may be less reliable. These features may be more precise indicators of depression in people with cancer and represent constructs overlooked in the traditional conceptualization of MDD.

Discussion

This review of the literature regarding the assessment and diagnosis of depression in older adults and patients with cancer reveals both potential confounds and possible solutions. Although inconsistencies abound, it appears that some of the criteria currently included in the DSM are imperfect indicators of depression in these subgroups. One option for refining assessment involves replacing some of the existing DSM criteria (particularly, the 'somatic' items) with alternative, more sensitive criteria that may improve diagnostic accuracy, but

further research, particularly with older cancer patients, is needed to adequately assess this possibility. Another option involves using an ‘etiological’ approach (i.e., the assessor is asked to determine the origin of a symptom as stemming from mood disorder or medical illness), but little research has examined the feasibility (e.g., reliability and validity) of such assessments. Despite the mixed research findings, the present review does underscore the potential utility of several constructs drawn from both the literature on older adults and cancer patients that have not traditionally been used in making a diagnosis of depression. The symptoms listed in Table 4 indicate both the unique and overlapping features of depression in older adults and cancer patients. The symptoms listed in Table 4 represent a plausible step in re-conceptualizing depression in older cancer patients, as these symptoms appear to be the most salient features that distinguish between depressed and non-depressed older adults, but minimize the potential confounding influence of cancer and its treatment. However, systematic research is clearly needed to determine whether the combination of age and cancer creates unique complications for the diagnosis of depression, and if so, whether alternative diagnostic criteria might be useful. Future efforts should explore these questions through implementation of a multi-modal approach, including both qualitative and quantitative analyses to better understand the phenomenology of depression in older cancer patients.

There are, of course, a number of justifications for enhancing diagnostic accuracy in identifying older cancer patients with depression. The over-diagnosis of depression likely places excessive demands on often-limited mental health resources. By providing services to patients who do not necessarily need intervention, the likelihood of patients who genuinely need help failing to receive it will inevitably increase. Likewise, patients may even react negatively to the suggestion that they are ‘depressed’ or in need of mental health intervention, perhaps straining physician-patient relationships (e.g., if patients feel that they are not accurately understood). The concern about overextending already-limited resources will only increase as the proportion of the US population over 65 continues to rise.

These caveats notwithstanding, there is little doubt that the failure to identify patients with severe depression is even more problematic than the problems caused by over-diagnosis. At its extreme, the risk of suicide, premature termination or refusal of treatment, or the failure to maintain optimal physical health are all potential consequences of severe depression in elderly cancer patients. Patients may even experience relief when their depression is detected by a professional, as it often provides the opportunity to discuss aspects of care that are routinely neglected (e.g., psycho-social concerns, palliative care). By improving the accuracy of diagnostic criteria, clinicians may also feel more confident in differentiating depression from the ‘typical’ sadness that may accompany a life-threatening illness such as cancer. Accurate assessment techniques are also critical for evaluating whether mental health interventions are beneficial, and reliance on flawed indicators may obscure the benefits of potentially useful treatments. Clearly, there is a pressing need to identify the most effective indicators of depression in elderly cancer patients. These efforts should extend beyond the current DSM diagnostic criteria and those previously proposed ‘substitutive’ criteria.

Although the data reviewed here present a strong case for systematically examining whether unique features of depression arise in older cancer patients, several limitations must be

acknowledged. First, we found no published literature that systematically examines the phenomenology of depression in older patients with cancer. Hence, we extrapolated from two related literatures—geriatric depression and psycho-oncology research. Nevertheless, there is little doubt that research directly targeting older cancer patients would help illuminate the issues raised in this review. Further, any study of the phenomenology of depression, particularly if the focus is on possible alterations in diagnostic criteria, must resolve the circularity that plagues this literature. Research on the phenomenology of depression typically relies on accepted diagnostic criteria for defining which individuals are ‘depressed.’ Although researchers could certainly instruct clinicians to ignore the DSM criteria in making diagnostic judgments about a patient, it is unknown how effective this method would be, given how entrenched the DSM criteria for depression are. Nevertheless, creative approaches to resolving these challenges are clearly needed in order to advance our understanding of depression beyond the existing conceptualization. Only with such concerted efforts will we enhance the ability of clinicians to identify and treat depression in this vulnerable group.

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References

- Akechi T, Ietsugo T, Sukigara M, Okamura H, Nakano T, Akizuki N, Uchitomi Y. Symptom indicator of severity of depression in cancer patients: A comparison of the DSM-IV criteria with alternative diagnostic criteria. *General Hospital Psychiatry*. 2009; 31:225–232. [PubMed: 19410101]
- Akincigil A, Olfson M, Walkup JT, Siegel MJ, Kalay E, Amin S, Crystal S. Diagnosis and treatment of depression in older community-dwelling adults: 1992–2005. *Journal of the American Geriatric Society*. 2011; 59:1042–1051.
- Alexopoulos GS, Borson S, Cuthbert BN, Devanand DP, Mulsant BH, Olin JT, Oslin DW. Assessment of late life depression. *Journal of Biological Psychiatry*. 2002; 52:164–174. [PubMed: 12182923]
- Alexopoulos GS, Kiosses DN, Klimstra S, Kalayam B, Bruce ML. Clinical presentation of the “depression-executive dysfunction syndrome” of late life. *American Journal of Geriatric Psychiatry*. 2002; 10:98–106. [PubMed: 11790640]
- Alexopoulos GS, Meyers BS, Young RC, Campbell S, Silbersweig D, Charlson M. The ‘vascular depression’ hypothesis. *Archives of General Psychiatry*. 1997; 54:915–922. [PubMed: 9337771]
- Almeida OP, Almeida SA. Short versions of the geriatric depression scale: A study of their validity for the diagnosis of a major depressive episode according to ICD-10 and DSM-IV. *International Journal of Geriatric Psychiatry*. 1999; 14:858–865. [PubMed: 10521885]
- American Cancer Society. Treatment side effects. 2015 Retrieved from <http://www.cancer.org/treatment/treatmentsandsideeffects/index>.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th. Arlington, VA: American Psychiatric Publishing; 2013.
- Balsis S, Cully JA. Comparing depression diagnostic symptoms across younger and older adults. *Aging and Mental Health*. 2008; 12:800–806. [PubMed: 19023732]
- Balentine C, Hermosillo-Rodriguez J, Robinson C, Berger D, Naik A. Depression is associated with prolonged and complicated recovery following colorectal surgery. *Journal of Gastrointestinal Surgery*. 2011; 15:1712–1717. [PubMed: 21786060]

- Beck, AT. Depression: Causes and treatment. Philadelphia, PA: First University of Pennsylvania Press; 1997.
- Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Archives of General Psychiatry*. 1961; 4:561–571. [PubMed: 13688369]
- Blazer DG. Depression in late life: Review and commentary. *Focus*. 2009; 7:118–136.
- Bukberg J, Penman D, Holland JC. Depression in hospitalized cancer patients. *Psychosomatic Medicine*. 1984; 46:199–212. [PubMed: 6739680]
- Butters MA, Whyte EM, Nebes RD, Begley AE, Dew MA, Mulsant BH, Becker JT. The nature and determinants of neuropsychological functioning in late-life depression. *Archives of General Psychiatry*. 2004; 61:587–595. [PubMed: 15184238]
- Carey M, Noble N, Sanson-Fisher R, Mackenzie L. Identifying psychological morbidity among people with cancer using the Hospital Anxiety and Depression Scale: Time to revisit first principles? *Psycho-Oncology*. 2012; 21:229–238. [PubMed: 21919120]
- Cavanaugh S, Clark D, Gibbons R. Diagnosing depression in the hospitalized medically ill. *Psychosomatics*. 1983; 24:809–815. [PubMed: 6647726]
- Chapman DP, Perry GS. Depression as a major component of public health for older adults. *Preventing Chronic Disease*. 2008; 5:1–9.
- Chen M, Chang H. Physical symptom profiles of depressed and nondepressed patients with cancer. *Palliative Medicine*. 2004; 18:712–718. [PubMed: 15623168]
- Chochinov HM, Wilson KG, Enns M, Lander S. Prevalence of depression in the terminally ill: Effects of diagnostic criteria and symptom threshold judgments. *American Journal of Psychiatry*. 1994; 151:537–540. [PubMed: 7511875]
- Christensen H, Jorm AF, Mackinnon AJ, Korten AE, Jacomb PA, Henderson AS, Rodgers B. Age differences in depression and anxiety symptoms: A structural equation modeling analysis of data from a general population sample. *Psychological Medicine*. 1999; 29:325–339. [PubMed: 10218924]
- Ellison JM, Kyomen HH, Harper DG. Depression in later life: An overview with treatment recommendations. *Psychiatry Clinics of North America*. 2012; 35:203–229.
- Endicott J. Measurement of depression in patients with cancer. *Cancer*. 1984; 53:2243–2249. [PubMed: 6704912]
- Extermann M, Hurria A. Comprehensive geriatric assessment for older patients with cancer. *Journal of Clinical Oncology*. 2007; 25:1824–1831. [PubMed: 17488980]
- Federal Interagency Forum on Aging-Related Statistics. *Older Americans 2012: Key indicators of well-being*. Washington, DC: US Government Printing Office; 2012.
- First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. Structured clinical interview for DSM-IV-TR Axis I disorders, research version, non-patient edition. New York, NY: Biometrics Research, New York State Psychiatric Institute; 2002.
- Fiske A, Wetherell JL, Gatz M. Depression in older adults. *Annual Review of Clinical Psychology*. 2009; 5:363–389.
- Gallagher D, Mhaolain AN, Greene E, Walsh C, Denihan A, Bruce I, Lawlor BA. Late life depression: A comparison of risk factors and symptoms according to age of onset in community dwelling older adults. *International Journal of Geriatric Psychiatry*. 2010; 10:981–987. [PubMed: 19998316]
- Gallo JJ, Anthony JC, Muthén BO. Age differences in the symptoms of depression: A latent trait analysis. *Journal of Gerontology*. 1994; 49:251–264.
- Gallo JJ, Rabins PV, Lyketsos CG, Tien AY, Anthony JC. Depression without sadness: Functional outcomes of nondysphoric depression in late life. *Journal of the American Geriatrics Society*. 1997; 45:570–578. [PubMed: 9158577]
- Gebretsadik M, Jayaprabhu S, Grossberg GT. Mood disorders in the elderly. *The Medical Clinics of North America*. 2006; 90:789–805. [PubMed: 16962842]
- Giese-Davis J, Collie K, Rancourt KMS, Neri E, Kraemer HC, Spiegel D. Decrease in depression symptoms is associated with longer survival in patients with metastatic breast cancer: A secondary analysis. *Journal of Clinical Oncology*. 2011; 29:413–420. [PubMed: 21149651]

- Golden J, Conroy RM, Bruce I, Denihan A, Greene E, Kirby M, Lawlor BA. Loneliness, social support networks, mood and wellbeing in community-dwelling elderly. *International Journal of Geriatric Psychiatry*. 2009; 24:694–700. [PubMed: 19274642]
- Gonzalez BD, Jacobsen PB. Depression in lung cancer patients: The role of perceived stigma. *Psycho-Oncology*. 2012; 21:239–246. [PubMed: 22383265]
- Guo Y, Musselman DL, Manatunga AK, Gillies N, Lawson KC, Porter MR, Nemeroff CB. The diagnosis of major depression in patients with cancer: A comparative approach. *Psychosomatics*. 2006; 47:376–384. [PubMed: 16959925]
- Hamilton MH. A rating scale for depression. *Journal of Neurology, Neurosurgery, and Psychiatry*. 1960; 23:56–62.
- Hann D, Winter K, Jacobsen P. Measurement of depressive symptoms in cancer patients: Evaluation of the center for epidemiological studies depression scale (CES-D). *Journal of Psychosomatic Research*. 1999; 46:437–443. [PubMed: 10404478]
- Hatfield JP, Hirsch JK, Lyness JM. Functional impairment, illness burden, and depressive symptoms in older adults: Does type of social relationship matter? *International Journal of Geriatric Psychiatry*. 2012; 28:1–9. [PubMed: 22407743]
- Hegeman JM, Kok RM, van der Mast RC, Giltay EJ. Phenomenology of depression in older compared with younger adults: Meta-analysis. *The British Journal of Psychiatry*. 2012; 200:275–281. [PubMed: 22474233]
- Hendrie HC, Callahan CM, Levitt EE, Hui SL, Musick B, Austrom MG, Tierney WM. Prevalence rates of major depressive disorders: The effects of varying diagnostic criteria in an older primary care population. *The American Journal of Geriatric Psychiatry*. 1995; 3:119–131.
- Holland, J.; Evcimen, Y. Common psychiatric problems in Elderly Patients with Cancer. Alexandria, VA: American Society of Clinical Oncology Educational Book; 2007. p. 307-311.
- Hopko DR, Bell JL, Armento MEA, Robertson SMC, Hunt MK, Wolf NJ, Mullane C. The phenomenology and screening of clinical depression in cancer patients. *Journal of Psychosocial Oncology*. 2008; 26:31–51. [PubMed: 18077261]
- Husain MM, Rush AJ, Sackeim HA, Wisniewski SR, McClintock SM, Craven N, Hauger R. Age-related characteristics of depression: A preliminary STAR*D report. *American Journal of Geriatric Psychiatry*. 2005; 13:852–860. [PubMed: 16223963]
- Jeste D, Blazer DG, First M. Aging-related diagnostic variations: Need for diagnostic criteria appropriate for elderly psychiatric patients. *Biological Psychiatry*. 2005; 58:265–271. [PubMed: 16102544]
- Kaji T, Mishima K, Kitamura S, Enomoto M, Nagase Y, Li L, Uchiyama M. Relationship between late-life depression and life stressors: Large-scale cross-sectional study of a representative sample of the Japanese general population. *Psychiatry and Clinical Neurosciences*. 2010; 64:426–434.
- Kathol RG, Mutgi A, Williams J, Clamon G, Noyes R. Diagnosis of major depression in cancer patients according to four sets of criteria. *American Journal of Psychiatry*. 1990; 147:1021–1024. [PubMed: 2375435]
- Koenig HG, Meador KG, Cohen HJ, Blazer DG. Self-rated depression scales and screening for major depression in the older hospitalized patient with medical illness. *Journal of the American Geriatrics Society*. 1988; 36:699–706. [PubMed: 3042842]
- Koenig HG, Pappas P, Holsinger T, Bachar JR. Assessing diagnostic approaches to depression in medically ill older adults: How reliably can mental health professionals make judgments about the cause of symptoms? *Journal of the American Geriatrics Society*. 1995; 43:472–478. [PubMed: 7730526]
- Koenig HG, George LK, Peterson BL, Pieper CF. Depression in medically ill hospitalized older adults: Prevalence, characteristics, and course of symptoms according to six diagnostic schemes. *American Journal of Psychiatry*. 1997; 154:1376–1383. [PubMed: 9326819]
- Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*. 2001; 16:606–613. [PubMed: 11556941]
- Lebel S, Devens GM. Stigma in cancer patients whose behavior may have contributed to their disease. *Future Oncology*. 2008; 4:717–733. [PubMed: 18922128]

- Lee CT, Leoutsakos JM, Lyketsos CG, Steffens DC, Breitner JC, Norton MC. Latent class-derived subgroups of depressive symptoms in a community sample of older adults: The Cache County Study. *The American Journal of Psychiatry*. 2012; 27:1061–1069.
- Lewinsohn PM, Seeley JR, Roberts RE, Allen NB. Center for Epidemiologic Studies Depression Scale (CES-D) as a screening instrument for depression among community-residing older adults. *Psychology and Aging*. 1997; 12:277–297. [PubMed: 9189988]
- Love AW, Grabsch B, Clarke DM, Bloch S, Kissane DW. Screening for depression in women with metastatic breast cancer: A comparison of the Beck Depression Inventory Short form and the Hospital Anxiety and Depression Scale. *Australian and New Zealand Journal of Psychiatry*. 2004; 38:526–531. [PubMed: 15255825]
- Luppa M, Sikorski C, Luck T, Ehreke L, Konnopka A, Wiese B, Reidel-Heller SG. Age- and gender-specific prevalence of depression in latest-life – systematic review and meta-analysis. *Journal of Affective Disorders*. 2012; 136:212–221. [PubMed: 21194754]
- Maglione JE, Ancoli-Israel S, Peters KW, Paudel ML, Yaffe K, Ensurd KE, Stone KL. Depressive symptoms and subjective and objective sleep in community-dwelling older women. *Journal of the American Geriatrics Society*. 2012; 60:635–642. [PubMed: 22428562]
- Massie MJ, Holland JC. Depression and the cancer patient. *Journal of Clinical Psychiatry*. 1990; 51:12–17. [PubMed: 2195008]
- McDaniel JS, Musselman DL, Porter MR, Reed DA, Nemeroff CB. Depression in patients with cancer – diagnosis, biology, and treatment. *Archives of General Psychiatry*. 1995; 52:89–99. [PubMed: 7848055]
- Mitchell AJ, Lord K, Symonds P. Which symptoms are indicative of DSMIV depression in cancer settings? An analysis of the diagnostic significance of somatic and non-somatic symptoms. *Journal of Affective Disorders*. 2012; 138:137–148. [PubMed: 22310033]
- Mitchell AJ, Meader N, Symonds P. Diagnostic validity of the Hospital Anxiety and Depression Scale (HADS) in cancer and palliative settings: A meta-analysis. *Journal of Affective Disorders*. 2010; 126:335–348. [PubMed: 20207007]
- Mohile SG, Fan L, Reeve E, Jean-Pierre P, Mustian K, Peppone L, Dale W. Association of cancer with geriatric syndromes in older Medicare beneficiaries. *Journal of Clinical Oncology*. 2011; 29:1458–1464. [PubMed: 21402608]
- Montorio I, Izal M. The geriatric depression scale: A review of its development and utility. *International Psychogeriatrics*. 1996; 8:103–112. [PubMed: 8805091]
- Moorey S, Steiner H. Do depressive symptoms differ between medically ill and non-medically ill patients referred for psychological therapy? Comparing negative thoughts about the self in cancer and non-cancer patients. *Behavioural and Cognitive Psychotherapy*. 2007; 35:283–291.
- Mora PA, Beamon T, Preuitt L, DiBonaventura M, Leventhal EA, Leventhal H. Heterogeneity in depression symptoms and health status among older adults. *Journal of Aging and Health*. 2012; 24:879–896. [PubMed: 22491993]
- Nezu AM, Nezu CM, Felgoise SH, McClure KS, Houts PS. Project genesis: Assessing the efficacy of problem-solving therapy for distressed adults cancer patients. *Journal of Consulting and Clinical Psychology*. 2003; 71:1036–1048. [PubMed: 14622079]
- Olden M, Rosenfeld B, Pessin H, Breitbart W. Measuring depression at the end of life: Is the Hamilton Depression Rating Scale a Valid Instrument? *Assessment*. 2009; 16:43–54. [PubMed: 18676960]
- Passik SD, Kirsh KL, Rosenfeld B, McDonald MV, Theobald DE. The changeable nature of patients' fears regarding chemotherapy: Implications for palliative care. *Journal of Pain and Symptom Management*. 2001; 21:113–120. [PubMed: 11226762]
- Passik, SD.; Lowery, A. Recognition of depression and methods of depression screening in people with cancer. In: Kissane, DW.; Maj, M.; Sartorius, N., editors. *Depression and cancer*. Oxford: Wiley and Sons; 2011. p. 81-100.
- Passik SD, Lundberg JC, Rosenfeld B, Kirsh KL, Donaghy K, Theobald D, Dugan W. Factor analysis of the Zung Self-Rating Depression Scale in a large ambulatory oncology sample. *Psychosomatics*. 2000; 41:121–127. [PubMed: 10749949]

- Plumb MM, Holland J. Comparative studies of psychological function in patients with advanced cancer. I: Self-reported depressive symptoms. *Psychosomatic Medicine*. 1981; 39:264–276. [PubMed: 897049]
- Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*. 1977; 1:385–401.
- Rao A, Cohen HJ. Symptom management in the elderly cancer patient: Fatigue, pain, and depression. *Journal of the National Cancer Institute Monographs*. 2004; 32:150–157. [PubMed: 15263059]
- Rapp SR, Parissi SA, Walsh DA, Wallace CE. Detecting depression in elderly medical inpatients. *Journal of Consulting and Clinical Psychology*. 1988; 56:509–513. [PubMed: 3198807]
- Rapp SR, Vrana S. Substituting nonsomatic for somatic symptoms in the diagnosis of depression in elderly male medical patients. *American Journal of Psychiatry*. 1989; 146:1197–1200. [PubMed: 2669537]
- Rayner L, Lee W, Price A, Monroe B, Sykes N, Hansford P, Hotopf M. The clinical epidemiology of depression in palliative care and the predictive value of somatic symptoms: Cross-sectional survey with four-week follow-up. *Palliative Medicine*. 2010; 25:229–241. [PubMed: 21228092]
- Reuter K, Harter M. Screening for mental disorders in cancer patients – discriminant validity of HADS and GHQ-12 assessed by standardized clinical interview. *International Journal of Methods in Psychiatric Research*. 2001; 10:86–96.
- Rhondali W, Perceau E, Berthiller J, Saltel P, Trillet-Lenoir V, Tredan O, Filbet M. Frequency of depression among oncology outpatients and association with other symptoms. *Support Care Cancer*. 2012; 20:2795–2802. [PubMed: 22350596]
- Robins LN, Wing J, Wittchen HU, Helzer JE, Babor FF, Burke J, Towle LH. The Composite International Diagnostic Interview: An epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Archives of General Psychiatry*. 1988; 45:1069–1077. [PubMed: 2848472]
- Satin JR, Linden W, Phillips MJ. Depression as a predictor of disease progression and mortality in cancer patients. *Cancer*. 2009; 115:5349–5361. [PubMed: 19753617]
- Sharpley CF, Bitsika V, Christie DHR. Are somatic symptoms a legitimate part of the depression profile in prostate cancer patients? *Onkologie*. 2013; 36:110–114. [PubMed: 23485998]
- Sheikh JI, Yesavage JA, Brooks JO, Friedman L, Gratzinger P, Hill RD, Crook T. Proposed factor structure of the Geriatric Depression Scale. *International Psychogeriatrics*. 1991; 3:23–28.
- Simon GE, Von Korff M. Medical co-morbidity and validity of DSM-IV depression criteria. *Psychological Medicine*. 2006; 36:27–36. [PubMed: 16202189]
- Spangenberg L, Forkman T, Brähler E, Glaesmer H. The association of depression and multimorbidity in the elderly: Implications for the assessment of depression. *Psychogeriatrics*. 2011; 11:227–234. [PubMed: 22151242]
- Spitzer RL, Endicott J, Robins E. Research Diagnostic Criteria: Rationale and reliability. *Archives of General Psychiatry*. 1978; 35:773–782. [PubMed: 655775]
- Steinman LE, Frederick JT, Prohaska T, Satariano WA, Dornberg-Lee S, Fisher R, Snowden M. Recommendations for treating depression in community-based older adults. *American Journal of Preventive Medicine*. 2007; 33:175–181. [PubMed: 17826575]
- Stek ML, Vinkers DJ, Gussekloo J, Beekman ATF, van der Mast RC, Westendorp RGJ. Is depression in old age fatal only when people feel lonely? *American Journal of Psychiatry*. 2005; 162:178–180. [PubMed: 15625218]
- Weinberger MI, Roth AJ, Nelson CJ. Untangling the complexities of depression diagnosis in older cancer patients. *Oncologist*. 2009; 14:60–66. [PubMed: 19144682]
- Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey M, Leirer VO. Development and validations of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research*. 1983; 17:37–49. [PubMed: 7183759]
- Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica*. 1983; 67:361–370. [PubMed: 6880820]
- Zimmerman M, Galione JN, Chelminski I, McGlinchey JB, Young D, Dalrymple K, Francione Witt C. A simpler definition of major depressive disorder. *Psychological Medicine*. 2010; 40:451–457. [PubMed: 19627639]

Zung WW. A self-rating depression scale. Archives of General Psychiatry. 1965; 12:63–70. [PubMed: 14221692]

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Table 1

Existing criteria for depression (DSM).

Affective and cognitive	Somatic
• Depressed mood	• Weight loss/gain or appetite disturbances
• Anhedonia	• Sleep disturbances
• Feelings of worthlessness or guilt	• Psychomotor retardation/agitation
• Diminished concentration	• Fatigue/loss of energy
• Suicidal ideation	• Appetite disturbances

Table 2

Summary of the literature on older adults: distinctive DSM criteria for MDD and additional possible diagnostic criteria.

	Affective and cognitive	Somatic
DSM criteria distinctive for older adults	<ul style="list-style-type: none"> • Anhedonia • Concentration difficulties 	<ul style="list-style-type: none"> • Sleep disturbances • Psychomotor retardation/agitation • Fatigue/loss of energy
Possible alternative criteria	<ul style="list-style-type: none"> • Irritability • Social withdrawal • Loneliness • Loss of purpose in life • 'Having nothing to do' • Memory disturbances • Psychic anxiety (i.e., tension, worry, apprehension) 	<ul style="list-style-type: none"> • Hypochondriasis • GI symptoms • General somatic symptoms

Note: DSM criteria listed are those that appear to be the most valid for diagnosing depression in older adults.

Table 3

Summary of the literature on cancer patients: distinctive DSM criteria for MDD and additional possible diagnostic criteria.

	Affective and cognitive	Somatic
DSM criteria distinctive for cancer patients	<ul style="list-style-type: none"> • Depressed mood • Anhedonia • Feelings of worthlessness/guilt • Concentration difficulties 	<ul style="list-style-type: none"> • Weight loss/gain or appetite disturbances • Insomnia/hypersomnia • Psychomotor retardation/agitation • Fatigue/loss of energy
Possible alternative criteria	<ul style="list-style-type: none"> • Social withdrawal/poor social functioning/decreased talkativeness • Cannot be cheered up/flat affect • Tearfulness • Brooding/pessimism • Not participating in treatment despite ability to do so • Psychic anxiety (i.e., tension, worry, apprehension) 	<ul style="list-style-type: none"> • Bodily pain • Physical/functional limitations beyond illness • Genital symptoms (i.e., loss of libido, impaired sexual performance)

Note: DSM criteria listed are those that appear to be the most valid for diagnosing depression in cancer.

Table 4

Overlapping features of depression in older adults and cancer patients: possible diagnostic criteria for depression in older cancer patients.

	Affective and cognitive	Somatic
DSM criteria (common to older adults and cancer patients)	<ul style="list-style-type: none"> • Anhedonia • Concentration difficulties 	<ul style="list-style-type: none"> • Sleep disturbances • Psychomotor retardation/agitation • Fatigue/loss of energy
Possible alternative criteria (common to older adults and cancer patients)	<ul style="list-style-type: none"> • Social withdrawal • Psychic anxiety (i.e., tension, worry apprehension) 	N/A
Possible alternative criteria (either cancer patients or older adults-not common to both)	<ul style="list-style-type: none"> • Irritability • Loneliness • Loss of purpose in life • 'Having nothing to do' • Memory disturbances • Hypochondriasis • GI symptoms • General somatic symptoms • Depressed mood • Worthlessness/guilt • Cannot be cheered up/flat affect • Tearfulness • Brooding/pessimism • Not participating in treatment despite ability to do so 	<ul style="list-style-type: none"> • Weight loss/gain or appetite disturbances • Bodily pain • Physical/functional limitations beyond illness • Genital symptoms (i.e., loss of libido, impaired sexual performance)

Note: *Common* refers to symptoms that are indicated in both the geriatric and cancer literature.