Published in final edited form as:

J Psychosom Res. 2013 November ; 75(5): . doi:10.1016/j.jpsychores.2013.08.015.

Assessing depression in obese women: an examination of two commonly-used measures

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Abstract

Objective—Obesity and depression are associated with somatic complaints that may complicate the measurement of depression in obese individuals. The Beck Depression Inventory-II (BDI-II) and the Hamilton Rating Scale for Depression (HRSD) are frequently used to measure depression severity. The BDI-II and HRSD's ability to measure depression severity may be compromised in those with obesity, to the extent that scores on their somatic items stem more from obesity than from depression. This study examined the: 1) internal consistency of the BDI-II and HRSD among obese women who varied in depressive symptomatology and 2) total and item-level change in the measures among participants who met criteria for depression remission at 6-months.

Methods—Data were from a randomized controlled trial of obese women with depression who received either behavioral activation for depression followed by a lifestyle intervention or a lifestyle intervention with attention control.

Results—At screening (n=355), internal consistency was strong for the BDI-II ($\alpha=0.89$), but moderate for the HRSD ($\alpha=0.67$). Among participants who met criteria for depression remission following treatment (n=115), every BDI-II item showed significant change at 6-months. In contrast, three HRSD items did not significantly change: the anxiety-somatic ($p=0.063$), somatic symptoms-gastrointestinal ($p=1.000$) and loss of weight ($p=0.319$) items.

Conclusion—The BDI-II may be more reliable and sensitive to change than the HRSD in obese women with comorbid depression. Intervention studies involving obese, depressed women should consider these findings in selecting depression outcome measures.

Keywords

Beck Depression Inventory; depression; Hamilton Depression Rating Scale; measurement; obesity

Introduction

Obesity and major depressive disorder (MDD) are highly comorbid in the population.[1] In nationally representative samples, prevalence estimates of MDD in obese samples range

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Conflict of interest statement

No authors have conflicts of interest.

from 18.6 to 24.1%. [2, 3] In weight loss treatment-seeking obese samples, prevalence of MDD is higher, with 19–50% reporting a lifetime history of MDD. [4–6] The comorbidity may be due, in part, to common symptoms. Adults with obesity report higher rates of sleep disturbance, weight gain, increased appetite, and fatigue, all of which are symptoms of MDD.[7–10] The overlap in symptoms of MDD and common physical complaints in obesity may complicate depression assessment in obese individuals, which has implications for treatment studies that address the comorbidity.[11]

We conducted a randomized controlled trial that sought to facilitate weight loss in women with comorbid obesity and MDD.[12] The trial examined whether a lifestyle intervention that includes evidence-based depression treatment (BA) facilitated greater weight loss than a lifestyle intervention alone (LI). Though participants in both conditions lost weight, no differences in weight loss were observed between the two conditions at the 6-month assessment.[12] For depression, participants in the BA condition reported significantly greater reductions in Beck Depression Inventory-II (BDI-II) scores at 6-months compared to the LI condition. In contrast, scores on the Hamilton Depression Rating Scale (HRSD) at 6-months were not significantly different between conditions. A similar pattern emerged when BDI-II and HRSD response cutoffs were used (i.e., at least a 50% reduction in scores), such that the BDI-II response rates were significantly different between conditions (66.4% of BA participants and 44.4% of LI participants were classified as responsive to treatment at 6 months), while the HRSD response rates were not (69.7% vs. 56.1%). However, when remission cutoffs were used (i.e., returning to the normal score range for each scale), differences by condition were significant at 6-months for the BDI-II and HRSD. To understand the discrepancy between BDI-II and HRSD in this sample, the purpose of the present study is to examine the reliability of these measures, as well as the sensitivity to change of the individual items and total score.

The HRSD and the BDI-II[13] are two of the most commonly used measures of depression severity and are frequently the primary and secondary outcome measures, respectively, used in depression treatment research (e.g.,[14, 15]). There are significant differences between the two scales, including unique strengths and weaknesses. The HRSD is a clinician-rated semi-structured interview, which enables the blinding of assessors to the participants' randomized condition in research. Despite this advantage, participant responses to the assessor's questions are not immune from response bias, unless patients are blinded to treatment as well. Substantial literature exists on the reliability and the validity of the HRSD to measure depression severity in depressed samples,[16] though it has been criticized for not reflecting current DSM-IV diagnostic criteria for MDD.[17] The HRSD emphasizes somatic symptoms of depression (e.g., three items assess sleep disturbances) and ignores some atypical symptoms of depression (e.g., increased appetite, hypersomnia), and thus may not capture all subtypes of MDD. Unlike the HRSD, the BDI was revised in 1996 (BDI-II) to evaluate all of the MDD diagnostic criteria from the DSM-IV. The BDI-II has substantial support for its reliability and validity,[16] but is a self-report measure that requires a fifth grade reading level, and may be vulnerable to response bias, especially when participants are not blinded to their treatment condition.

Using self-report depression measures, like the BDI, with obese samples has been questioned due to the inclusion of somatic items (e.g., tiredness, sleep disturbance).[18] No research exists on the ability of the HRSD to assess depression among obese individuals. In a study of adults with multiple sclerosis and MDD, five HRSD items (i.e., somatic anxiety, psychomotor agitation, psychomotor retardation, late insomnia and insight) did not significantly change following successful depression treatment.[19] In contrast, all BDI items demonstrated significant change following treatment. Moran & Mohr [19] concluded that these five HRSD items may obscure the degree to which HRSD can detect change in

depression in adults with multiple sclerosis. The same could be true for obese populations, but this has not been explored. Few trials have targeted comorbid obesity and MDD, thus we had a unique opportunity to address this question.

This study examines the ability of the BDI-II and the HRSD to assess depression symptomatology and treatment response in obese women with comorbid MDD using data collected from a randomized controlled weight loss trial. The first study aim was to assess the reliability of these measures by examining the internal consistency of the BDI-II and the HRSD among a sample of obese women who varied in depressive symptomatology at an initial screening visit. Second, the sensitivity to change of the BDI-II and HRSD items was examined by testing whether the individual items and the total scale score significantly decreased following treatment among all participants who no longer met criteria for depression by the end of treatment. We hypothesized that the somatic symptom items of the BDI-II and the HRSD would not significantly change following depression treatment, while the cognitive and behavioral items would significantly improve following treatment. To examine the consistency of the sensitivity to change results among participants who received an evidence-based depression treatment, these analyses were repeated with the participants who received behavior therapy for depression and recovered from depression.

Methods

Data for this secondary data analysis were collected via a randomized controlled trial testing whether obese women with major depression lost more weight if they received behavioral activation for depression followed by a lifestyle intervention (BA) compared to a lifestyle intervention with health education attention control (LI). Complete study methodology is described elsewhere [20]. Specific methodology relevant to the current study is subsequently described. The Institutional Review Board of the University of Massachusetts Medical School approved this study.

Samples

Three different analytic samples were used for this study. The first analytic sample included all participants with complete screening data for the BDI-II and the HRSD, regardless of whether they met the eligibility criteria for the parent trial ($n=355$), because this sample includes the widest range of depression scores to examine internal consistency. To maximize our sample size for the sensitivity to change analyses, the second analytic sample included all participants who recovered from depression at post-treatment according to the Structured Clinical Interview for DSM-IV-TR disorders (SCID; $n = 115$), since significant change in depression was observed in both conditions. The third analytic sample included a subset of participants who were randomized to behavior therapy for depression and recovered from depression at post-treatment according to the SCID ($n = 55$), which allowed us to examine the consistency of the sensitivity to change analyses among those who received evidence-based treatment for depression.

Procedures

Participants were recruited from community advertisements and flyers, and through referrals from primary care clinics for a weight loss study. Interested individuals called to learn about the study and complete a telephone screening to assess initial eligibility. The telephone screening included assessment of depression symptoms, weight, height, current and past physical and mental health conditions and medications. Potentially eligible participants then were scheduled for an in-person screening session. Participants were scheduled for an in-person screening if they endorsed 3 or more symptoms of depression and had a body mass index (BMI) between 29–41 kg/m² based on self-reported weight and height. This BMI

range was wider than the study inclusion criteria range of 30–40 kg/m² to limit the exclusion of individuals who may have misreported their height and/or weight. Individuals were ineligible at the telephone screening if they endorsed an exclusionary medical or psychiatric condition (e.g., bipolar disorder, psychotic disorder, bulimia, post-traumatic stress disorder, or type 1 or 2 diabetes), reported use of medications that impact weight (e.g., corticosteroids, tricyclic antidepressants), were currently in psychotherapy, reported a psychiatric hospitalization in the past year, were pregnant or trying to become pregnant, reported smoking or were non-English speaking.

Participants who attended the in-person screening session were told that the study was testing two different approaches to weight loss in the context of depression and that they would be randomly assigned to one of the two approaches to help them lose weight and potentially improve their mood. Participants were informed that the BA condition would begin with behavior therapy, and at week 8, they would begin a lifestyle intervention, while the LI condition would begin with the lifestyle intervention and have health education visits interspersed. Participants provided written informed consent and completed the Structured Clinical Interview for DSM-IV-TR disorders (SCID),[21] the Beck Depression Inventory- II (BDI-II)[13] and the Hamilton Rating Scale for Depression (HRSD).[22] Weight and height were measured to calculate BMI. Participants eligible for the trial met criteria for MDD according to the SCID, did not endorse suicidal intent, had a measured BMI between 30–40 kg/m² and received physician approval to participate in the study. The BMI cutoff of 40 kg/m² was used to exclude individuals with class III obesity who may be more likely to have functional limitations that may prevent participation in moderate intensity physical activity.

After the in-person screening, eligible participants completed a baseline assessment, which included the BDI-II and HRSD. They were then randomized to one of the two treatment conditions (BA or LI) for the parent study. Participants in the BA condition received 10 weeks of individual treatment using behavioral activation treatment for depression,[23] followed by 16 weeks of a group lifestyle intervention. Participants in the LI condition received 16 visits of a group lifestyle intervention over the course of 6 months along with individual health education visits to control for attention. Participants then attended a 6-month assessment at which they completed the depression assessments (SCID, BDI-II and HRSD).

Measures

Hamilton Rating Scale for Depression (HRSD).[24]—This 17-item semi-structured interview measure was administered by a trained master's or doctoral level clinician. Clinicians were blind to participant's condition allocation. The HRSD is correlated with psychiatrists' global ratings, has concurrent validity with other measures of depression (e.g., 0.75 for the BDI) and has high internal consistency across hundreds of published studies. [25] The HRSD includes 6 somatic-related items: insomnia, loss of weight, anxiety-somatic, somatic symptoms-gastrointestinal, somatic symptoms-general and genital symptoms.

Beck Depression Inventory-II (BDI-II).[13]—Participants completed this 21-item self-report inventory. Items are scored on a scale from 0–3, with higher scores reflecting more severe symptoms. The BDI-II was found to have high internal consistency, high content validity, validity in differentiating between depressed and nondepressed individuals, and good sensitivity to change.[26] The BDI-II includes 5 somatic items: loss of energy, changes in sleeping patterns, changes in appetite, loss of interest in sex, tiredness or fatigue.

Structured Clinical Interview for DSM-IV-TR Axis I Disorders-Research Version (SCID). [21]—The SCID is a structured clinical interview used to diagnose Axis I

disorders, including MDD. A diagnosis of MDD primarily requires: 1) endorsement of 5 or more symptoms of depression lasting 2 weeks or longer and resulting in a change in functioning and 2) at least one of the 5 symptoms endorsed must include depressed mood or loss of interest/pleasure. Clinicians administering the SCID were blinded to participants' assigned treatment condition and participants were asked not to discuss their treatment with the assessor. Participants were considered remitted from depression if they no longer met criteria for MDD at their 6-month assessment. The SCID depression module was used to define participants who experienced significant depression change from baseline to 6-months since it is an objective assessment of MDD remission that enables using the same criterion for each scale, and has been used to test a depression measure's sensitivity to change.[27]

Analytic plan

Internal consistency—Cronbach's alpha and the corrected item total correlation (CITC) were calculated to examine the internal consistency of the HRSD and BDI-II. If a measure demonstrated poor internal consistency, the Cronbach's "alpha if item deleted" results were examined to identify items that significantly hinder reliability.

Sensitivity to change—To examine the sensitivity of the HRSD and BDI-II to depression change, paired t-tests were conducted comparing the HRSD and BDI-II total score and item-level depression change from baseline to 6 months. Separate analyses were conducted for all participants with complete data who no longer met criteria for MDD according to the SCID at the 6-month assessment (n=115) and those who received depression treatment and no longer met criteria for MDD according to the SCID at the 6-month assessment (n=55), to ensure that the sample demonstrated significant improvement in depression. All analyses were conducted in IBM SPSS (Version 20, Armonk, NY).

Results

Demographics for the three analytic samples are described in Table 1.

Internal consistency (n=355)

Internal consistency was strong for the BDI-II ($\alpha=0.894$, CITC range=0.401–0.633), but moderate for the HRSD ($\alpha=0.667$, CITC range=–0.087–0.449). For the HRSD, examination of the Cronbach's "alpha if item deleted" revealed that removal of the loss of weight and insight items slightly improved internal consistency ($\alpha=0.669$ and $\alpha=0.678$, respectively), but not enough to meet the common 0.70 criterion of acceptable internal consistency.[28] Removing the psychomotor retardation and the somatic symptoms-gastrointestinal items resulted in no change in reliability ($\alpha=0.667$). Removal of any of the other items would worsen reliability (range of Cronbach's "alpha if item deleted": $\alpha=0.624$ to $\alpha=0.662$).

Sensitivity to change

The BDI-II total score ($d=2.092$) and every BDI-II item showed significant change from baseline to 6 months among participants who no longer met criteria for MDD at 6 months according to the SCID (n=115) and among participants in the BA condition who no longer met criteria for MDD at 6 months according to the SCID (n=55; Table II).

The total HRSD score showed significant change from baseline to 6 months ($d=2.268$) among all participants who were no longer depressed according to the SCID (n=115), but three HRSD items showed no significant change: anxiety-somatic ($t=1.880$; $p=0.063$; $d=0.235$), somatic symptoms-gastrointestinal ($t=0.000$; $p=1.000$; $d=0.000$) and loss of weight ($t=1.000$; $p=0.319$; $d=0.113$) items (Table III). Among the subsample that was in the

BA condition and whose depression remitted ($n=55$), two HRSD items did not show significant change: the somatic symptoms-gastrointestinal ($t=0.574$; $p=0.568$; $d=0.111$) and loss of weight ($t=1.000$; $p=0.322$; $d=0.110$) items (Table III).

Discussion

Results suggest that the BDI-II may be a highly internally consistent measure of depression severity among women with class I–II obesity. In contrast, the HRSD demonstrated only modest internal consistency. The low internal consistency observed in this study ($\alpha = 0.67$) is within the range observed in a review of the HRSD ($\alpha = 0.46 - 0.99$).[17]

The total scores for the BDI-II and HRSD demonstrated significant improvement over time, which is not particularly surprising given that the samples were selected because they no longer met criteria for MDD according to the SCID, and the main trial found significant differences in the BDI-II and HRSD from baseline to 6-months.[12] However, the measures differed in the extent to which the individual items were sensitive to change. All 21 items of the BDI-II demonstrated significant change among participants with remitted depression. In contrast, three HRSD items, anxiety-somatic, loss of weight and somatic symptoms-gastrointestinal, did not significantly change among remitters. The loss of weight and somatic symptoms-gastrointestinal remained non-significant when analyses were repeated in depression remitters who received an evidence-based depression treatment. The internal consistency analysis suggested that removing the loss of weight item would slightly improve the reliability of the HRSD, while removing the somatic symptoms-gastrointestinal item would not change reliability. The somatic symptoms-gastrointestinal item assesses decreased appetite and/or loss of interest or pleasure from eating. This item may be confounded with a weight loss attempt as portion reductions or diet changes, such as reducing intake of high fat foods, could have implications for appetite and/or interest in eating. The HRSD clinician, as well as the patient, might have difficulty discerning whether the patient's appetite and interest in eating is related to depression or the weight loss attempt. Unlike the HRSD, the BDI-II does not formally assess weight loss, but it does assess appetite change in both directions. The wider response option, the focus on appetite rather than weight loss, or the use of self-report may explain the sensitivity to change of this item.

Results are consistent with a study that compared the sensitivity to change of the BDI and HRSD items in adults with comorbid MDD and multiple sclerosis and found that several HRSD somatic items did not change, while all BDI items did change following depression treatment.[19] Another study found greater discriminant validity for the BDI-II relative to the HRSD in adults with Huntington's disease.[29] In populations with physical conditions, the BDI-II may be a more valid measure of depression severity than the HRSD.

The BDI-II has some limitations, most notably that self-report measures may be more sensitive to response bias than interview administered measures. Participant preferences for either the BA or the LI condition may have influenced their responses on the BDI-II, though this same bias may have influenced their responses to the HRSD assessor's questions. Among samples with depression, differences in HRSD and BDI-II total scores and sensitivity to change have been attributed to myriad factors other than response bias, including item content, demographic factors and personality traits.[30, 31] Given the discrepancy observed between the HRSD and BDI-II, even among samples without a medical comorbidity, as well as the different subtypes of depression captured by these measures, multiple assessments of depression appear warranted, as advocated by Enns and colleagues [31], to ensure confidence in the results.

Other interview-administered depression measures should be examined for their reliability and validity in individuals with comorbid health conditions. The Inventory of Depressive Symptoms (IDS), which assesses depressive symptoms in the past seven days, demonstrates strong reliability and validity and may be a promising alternative[17](freely available at: <http://www.ids-qids.org/>). The IDS directly assesses the DSM-IV criteria for MDD, unlike the BDI-II and HRSD, and has clinician-rated (IDS-C₃₀) and self-report (IDS-SR₃₀) versions, as well as truncated versions of each measure (QIDS-C₁₆ and QIDS-SR₁₆).[32–34] The QIDS-C₁₆ may be particularly useful for capturing depression in those with comorbid medical conditions as it only assesses the nine DSM-IV MDD symptoms (i.e., depressed mood, anhedonia, weight change, insomnia/hypersomnia, loss of energy, psychomotor retardation/agitation, feelings of worthlessness/excessive guilt, diminished concentration and thoughts of death/suicide). Studies examining the psychometric properties of the IDS and QIDS in samples with comorbid medical conditions are ongoing.

Study strengths include the use of blinded clinicians and a structured clinical interview to assess depression. Interpretation of the current study requires several caveats related to the sample demographics, study methodology and sample size. The screening sample does not include obese women with minimal or the most severe symptoms of depression since participants had to endorse at least three symptoms of depression to be scheduled for a screening visit and could not endorse suicidal intent. All participants were female and mostly white; results may not generalize to males or minority populations. Additionally, the randomization sample is not necessarily reflective of depressed, obese women in the general population since participants were volunteering for an intensive weight loss intervention, and those endorsing severe depression or suicidal intent or who had a BMI indicative of class III obesity were ineligible.

This is a secondary data analysis from a RCT and thus was not specifically designed to test the reliability and validity of depression assessments. Clinician-rated depression assessments (HRSD and SCID) were not evaluated for inter-rater reliability. However, assessors were trained and supervised by a licensed clinical psychologist with 12 years of experience with these instruments. The RCT includes the largest sample of obese individuals with diagnosed MDD who received depression treatment and completed longitudinal assessments including the BDI-II and HRSD, and thus provides a unique opportunity to examine item-level change in depression for the BDI-II and HRSD.

For the depression change analyses, the small sample size may have limited power to detect small, but significant changes in the weight loss and somatic symptoms-gastrointestinal items following depression treatment. Thus, it may be premature to conclude that the loss of weight and somatic symptoms-gastrointestinal items on the HRSD should not be used in obese samples due to insensitivity to change until replication with a larger sample occurs.

The BDI-II may be preferable to the HRSD for assessing depression change in adults with obesity and comorbid MDD given it has greater internal consistency and demonstrated sensitivity to change on every item. Using a measure that is not reliable or sensitive to change could lead to false negative results in treatment outcome studies. Future research should explore the reliability and validity of depression measures among those with other comorbid physical conditions.

Acknowledgments

The project described was supported by grant 1R01MH078012 to Dr. Pagoto from the National Institute of Mental Health. The funding agency had no role in the study design, the collection, analysis and interpretation of data, in the writing of the article or in the decision to submit this article for publication. Dr. Busch's effort on this manuscript

was supported by grant K23HL107391 from the National Heart Lung and Blood Institute. Partial salary support for Dr. Waring is provided by the National Institutes of Health grants 1U01HL105268 and KL2TR000160.

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Table 1

Characteristics of screening participants (n=335), participants with remitted depression according to the SCID (n=115) and participants with remitted depression who received an evidence-based depression treatment (n=55).

	Screening sample (n=355)	Participants with remitted depression (n=115)	Participants with remitted depression who received an evidence-based depression treatment (n=55)
	M (SD)	M (SD)	M (SD)
Age	46.29 (10.68)	45.13 (10.66)	44.60 (10.72)
Body mass index	35.77 (3.58)	35.34 (3.35)	36.09 (3.32)
Screening HRSD	15.83 (6.38)	-	-
Screening BDI-II	22.21 (9.76)	-	-
Baseline HRSD	-	14.56 (2.93)	14.77 (3.00)
Baseline BDI-II	-	20.73 (5.52)	21.23 (5.53)
	% (n)	% (n)	% (n)
Marital status			
Single	15.8 (56)	19.1 (22)	17.7 (11)
Married	56.9 (202)	58.3 (67)	58.1 (36)
Living with partner	9.0 (32)	8.7 (10)	11.3 (7)
Divorced	13.2 (47)	8.7 (10)	4.8 (3)
Separated	3.1 (11)	3.5 (4)	4.8 (3)
Widowed	2.0 (7)	1.7 (2)	3.2 (2)
Education			
Less than a college degree	55.5 (197)	46.0 (53)	53.2 (33)
College degree	23.7 (84)	22.6 (26)	25.8 (16)
Greater than a college degree	20.8 (74)	31.2 (36)	21.0 (13)
Race / ethnicity			
Hispanic	11.0 (39)	9.6 (11)	14.5 (9)
White	83.4 (271)	77.4 (89)	66.1 (41)
African-American	5.1 (18)	3.5 (4)	6.5 (4)
Asian-American	0.6 (2)	1.7 (2)	1.6 (1)
Native American	5.4 (19)	5.2 (6)	9.7 (6)
Multi-ethnic	1.7 (6)	2.6 (3)	1.6 (1)

Table 2

Item level-change for the Beck Depression Inventory-II among all participants with remitted depression according to the SCID (n=115) and those that received an evidence-based depression treatment (n=55).

	Participants with remitted depression (n=115)	Effect size	Participants with remitted depression who received an evidence-based depression treatment (n=55)	Effect size
	Mean change (95% CI)	d	Mean change (95% CI)	d
Total score	12.078 (10.821–13.335)	2.092	13.891 (12.262–15.502)	2.463
Item				
Sadness	0.565 (0.467–0.663)	1.298	0.600 (0.466–0.734)	1.488
Pessimism	0.513 (0.403–0.623)	1.056	0.509 (0.346–0.673)	1.073
Past failure	0.652 (0.505–0.799)	0.978	0.655 (0.432–0.877)	1.043
Loss of pleasure	0.635 (0.491–0.778)	1.117	0.727 (0.523–0.932)	1.343
Guilty feelings	0.496 (0.383–0.609)	0.892	0.545 (0.391–0.700)	1.051
Punishment feelings	0.183 (0.083–0.282)	0.341	0.236 (0.056–0.412)	0.349
Self-dislike	0.983 (0.822–1.143)	1.336	1.200 (0.971–1.429)	1.905
Self-criticalness	0.696 (0.575–0.816)	1.297	0.745 (0.564–0.927)	1.418
Suicidal thoughts or wishes	0.096 (0.041–0.150)	0.460	0.145 (0.049–0.242)	0.580
Crying	0.722 (0.539–0.904)	0.896	0.727 (0.516–0.938)	1.130
Agitation	0.443 (0.316–0.571)	0.863	0.491 (0.319–0.662)	1.026
Loss of interest	0.704 (0.568–0.841)	1.134	0.855 (0.671–1.038)	1.502
Indecisiveness	0.574 (0.447–0.701)	0.874	0.691 (0.519–0.862)	1.142
Worthlessness	0.470 (0.333–0.607)	0.743	0.600 (0.395–0.805)	0.925
Loss of energy	0.687 (0.552–0.822)	1.150	0.727 (0.510–0.945)	1.182
Changes in sleep	0.678 (0.503–0.854)	0.892	0.636 (0.420–0.853)	0.874
Irritability	0.548 (0.422–0.673)	0.949	0.782 (0.589–0.974)	1.360
Changes in appetite	0.374 (0.207–0.541)	0.506	0.509 (0.277–0.741)	0.721
Concentration difficulty	0.583 (0.453–0.712)	0.918	0.600 (0.395–0.805)	0.935
Tiredness or fatigue	0.783 (0.628–0.937)	1.161	0.909 (0.699–1.119)	1.342
Loss of interest in sex	0.696 (0.478–0.913)	0.652	1.000 (.688–1.312)	1.004

^a SCID= Structured Clinical Interview for DSM-IV-TR Axis I disorders-Research Version

^b CI=Confidence interval

Table 3

Item level-change for the Hamilton Depression Rating Scale among all participants with remitted depression according to the SCID (n=115) and those that received an evidence-based depression treatment (n=55).

	Participants with remitted depression (n=115)	Effect size (d)	Participants with remitted depression who received an evidence-based depression treatment (n=55)	Effect size (d)
	Mean change (95% CI)		Mean change (95% CI)	
Total score	9.096 (8.172–10.020)	2.268	9.818 (8.604–11.033)	2.582
Item				
Depressed mood	1.461 (1.271–1.651)	1.894	1.382 (1.124–1.639)	1.803
Feelings of guilt	0.983 (0.801–1.164)	1.248	.945 (0.678–1.213)	1.130
Suicide	0.078 (0.013–0.144)	0.320	.127 (0.010–0.244)	0.424
Insomnia early	0.391 (0.209–0.574)	0.505	.527 (0.262–0.792)	0.708
Insomnia middle	0.4000 (0.227–0.573)	0.568	.473 (0.241–0.705)	0.683
Insomnia late	0.296 (0.137–0.454)	0.441	.327 (0.077–0.577)	0.501
Work and activities	1.991 (1.784–2.198)	2.459	2.091 (1.786–2.395)	2.649
Psychomotor retardation	0.678 (0.550–0.807)	1.277	.709 (0.517–0.901)	1.288
Agitation	0.278 (0.145–0.411)	0.543	.273 (0.068–0.477)	0.515
Anxiety, psychological	0.478 (0.271–0.685)	0.542	.545 (0.266–0.825)	0.671
Anxiety, somatic	0.200 (–0.011–0.411)	0.235	.327 (0.024–0.631)	0.382
Somatic symptoms, gastrointestinal	0.000 (–0.077–0.077)	0.000	.036 (–0.091–0.163)	0.111
Somatic symptoms, general	0.861 (–0.677–1.042)	1.228	.945 (0.694–1.197)	1.399
Genital symptoms	0.452 (0.277–0.627)	0.579	.545 (0.252–0.839)	0.683
Hypochondriasis	0.304 (0.110–0.499)	0.370	.364 (0.077–0.650)	0.410
Loss of weight	0.017 (–0.017–0.052)	0.113	.018 (–0.018–0.055)	0.110
Insight	0.226 (0.131–0.321)	0.644	.182 (0.043–0.320)	0.518

^a SCID= Structured Clinical Interview for DSM-IV-TR Axis I disorders-Research Version

^b CI=Confidence interval