Symptoms of Heart Disease or its Treatment May Increase Beck Depression Inventory Scores in Hospitalized Post-Myocardial Infarction Patients

Running head: Depression Scores in Post-Myocardial Infarction Patients

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ABSTRACT

Objective: The Beck Depression Inventory (BDI) is one of the most commonly used self-report depression symptom questionnaires in medical settings. The revised BDI-II was developed in 1996, partially due to concerns about the influence of somatic symptoms from medical illness on BDI scores. The BDI, however, continues to be frequently used in medical settings. The objective of this study was to examine the degree to which somatic symptom items influence BDI scores among hospitalized post-myocardial infarction (MI) patients with major depressive disorder (MDD) compared to psychiatry outpatients with MDD matched on cognitive/affective scores, sex, and age.

Methods: Somatic scores of post-MI patients with MDD and matched psychiatry outpatients with MDD were compared using independent samples *t*-tests.

Results: 579 post-MI patients with MDD (mean age=54.4 years, SD=9.9) and 579 psychiatry outpatients with MDD (mean age=51.2 years, SD=9.7) were matched on cognitive/affective scores, sex, and age. Somatic symptoms accounted for 47% of BDI total scores among post-MI patients (mean total=22.6, SD=8.8) versus 37% among psychiatry outpatients (mean total=19.2, SD=9.7). Somatic scores of post-MI patients were 3.4 points higher than for matched psychiatry outpatients (95% confidence interval 3.0 to 3.9; $p<.001$), a difference that is equivalent to 15% of total post-MI patient scores.

Conclusion: BDI scores of hospitalized post-MI patients with MDD may, in part, reflect symptoms of the acute medical condition or its treatment, rather than depression. The BDI-II was designed to reduce the influence of somatic symptoms on total scores and may be preferable to the BDI among heart disease patients.

Keywords: Beck Depression Inventory; Cardiovascular disease; Depression, Myocardial

infarction; Psychometrics.

INTRODUCTION

Major depressive disorder (MDD) is common among patients with chronic medical disease and is associated with increased morbidity and mortality {{267 Katon,W.J. 2011; 265 Clarke,D.M. 2009; 266 Egede,L.E. 2007; 268 Moussavi,S. 2007; 269 Patten,S.B. 2006; 1 Evans,D.L. 2005}}. Among patients with cardiovascular disease, the prevalence of MDD is approximately 20% {{231 Thombs,B.D. 2006; 232 Rutledge,T. 2006}}. Depression following acute myocardial infarction (MI) is associated with an increased risk of subsequent cardiovascular events and mortality {{253 Nicholson,A. 2006; 251 Frasure-Smith,N. 2005; 236 Sorensenf,C. 2005; 238 Barth,J. 2004; 239 van Melle,J.P. 2004}}, as well as greater disability {{240 Ruo,B. 2003}}, reduced quality of life {{14 Rumsfeld,J.S. 2005}}, and higher health care costs {{242 Frasure-Smith,N. 2000}}.

Concerns have been raised, however, about the validity of assessing symptoms of depression with self-report questionnaires among patients with chronic medical disease because symptoms that commonly occur in this context may be misinterpreted as mood-related {{274 Kathol,R.G. 1990; 273 Rodin,G. 1986}}. Symptoms that occur in many patients hospitalized for an MI, including appetite disturbances, sleep disturbances, and fatigue, for example, may overlap substantially with somatic symptoms of depression. This has led some experts to suggest that scores on self-report depression symptom questionnaires among post-MI patients may reflect both symptoms of depression and cardiovascular disease severity and that this may artificially increase the association between post-MI depressive symptoms and subsequent cardiovascular events and mortality {{253 Nicholson,A. 2006; 236 Sorensenf,C. 2005; 247 Lane,D. 2003; 249 Mendes de Leon,C.F. 1999}}. After adjustment for disease severity, symptoms of depression are still associated with poorer cardiovascular prognosis, albeit to a reduced degree {{253

Nicholson,A. 2006; 235 Meijer,A. 2011}}. Nonetheless, the likelihood of residual confounding raises the possibility of overestimation of the strength of this relationship {{305 Macleod,J. 2003; 304 Macleod,J. 2003}}.

The Beck Depression Inventory (BDI) {{270 Beck,Aaron. T. 1987}} is commonly used in medical settings and has been used more than any other self-report depression symptom questionnaire in studies of patients with cardiovascular disease {{231 Thombs,B.D. 2006; 239 van Melle,J.P. 2004; 235 Meijer,A. 2011; 244 Davidson,K.W. 2006}}. In part due to concerns that the BDI may be unduly influenced by somatic symptoms not necessarily related to depression, the revised BDI-II {{271 Beck,A. T. 1996}} was developed. The BDI-II includes three fewer somatic symptom items than the BDI. Specifically, items 15 (*work difficulty*), 19 (*weight loss*), and 20 (*somatic preoccupation*) on the BDI were removed in developing the revised BDI-II. In addition, changes were made in the response options of items 16 (*insomnia*) and 18 (*loss of appetite*) in an attempt to reduce the effect of somatic symptoms on total scores. Consistent with this, a study of the BDI {{278 Delisle, VC. In press}} found that the relative influence of somatic symptoms on the BDI total scores was significantly higher for 296 hospitalized post-MI patients than for psychiatry outpatients matched on cognitive/affective symptom scores, sex, and age, equivalent to 14% of total BDI scores of post-MI patients. On the other hand, a study of the BDI-II {{250 Thombs,B.D. 2010}} found no difference in BDI-II somatic symptom scores between 209 hospitalized post-MI patients and psychiatry outpatients similarly matched on cognitive/affective symptom scores, sex, and age. A limitation of both of those studies, however, was that psychiatry outpatients were matched with post-MI patients, most of whom did not have depression. Thus, BDI and BDI-II scores of matched post-MI and psychiatry outpatients in the two studies were relatively low. To address this issue, the present

study compared BDI somatic symptom scores of post-MI patients with MDD and psychiatry outpatients with MDD matched exactly on individual cognitive/affective symptom scores, as well as sex and age.

METHOD

Patients and Procedure

This study was a secondary analysis of existing datasets. Post-MI patient data was from the Enhancing Recovery in Coronary Heart Disease (ENRICHD) study {{286 Berkman,L.F. 2003}} and was obtained from the National Heart, Lung, and Blood Institute Biologic Specimen and Data Repository Information Coordinating Center. Psychiatry outpatient data was obtained from Center of Cognitive Therapy of the University of Pennsylvania in Pennsylvania, USA. Ethics approval for this study was obtained from the Research Ethics Committee of the Jewish General Hospital, Montréal, Québec, Canada.

The methods of this study closely replicate the methods that were used in two previous studies that compared somatic symptoms scores on the BDI {{278 Delisle, VC. In press}} and the BDI-II {{250 Thombs,B.D. 2010}} of post-MI patients and psychiatry outpatients. In this study, however, unlike in those previous studies, only post-MI and psychiatry patients with a diagnosis of MDD were included.

Post-MI Patients. The post-MI sample consisted of baseline data from patients admitted with an MI to 1 of 73 hospitals in the USA who were enrolled in the ENRICHD depression treatment trial {{286 Berkman,L.F. 2003}}. Patients recruited between October 1996 and October 1999 were eligible for the trial if they had a diagnosis of MDD or minor depression, or were determined to have low social support. Patients with active substance abuse, bipolar disorder, severe dementia or schizophrenia, or who were at imminent risk for suicide were

excluded from the study. Before April 1998, patients taking an antidepressant medication were also excluded from the study. Following April 1998, patients who were taking an antidepressant for longer than two weeks but who met other eligibility criteria were included in the study.

Research nurses approached potentially eligible patients for informed consent and enrollment within 28 days of the acute MI, at which time study assessments of depression and social support were conducted. MDD, minor depression, and dysthymia were diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria using the Depression Interview and Structured Hamilton {{284 Freedland,K.E. 2002}}. ENRICHD methods have previously been described {{286 Berkman,L.F. 2003; 301 ENRICHD Investigators 2001}}. In the present study, only patients from ENRICHD with MDD, with or without low perceived social support, were included in analyses.

Psychiatry Outpatients. The psychiatry outpatient sample consisted of patients seeking treatment for mental health problems at the Center of Cognitive Therapy of the University of Pennsylvania in Pennsylvania, USA between July 1972 and February 1998. Patients provided informed consent and were administered a standard intake battery of psychological measures, including the BDI. In addition, patients received a psychiatric diagnosis based on a clinical interview. Patients recruited from 1983 forward were interviewed and diagnosed by a doctoral-level clinician with consecutive editions of the Structured Clinical Interview for the DSM-III or DSM-III-R {{279 Spitzer,R. L. 1990}}. All diagnoses were translated into diagnoses based on the DSM-IV following guidelines and comparative listings presented in consecutive issues of the DSM. Only patients with a diagnosis of MDD were included in analyses.

Matching Procedure. Post-MI patients and psychiatry outpatients who completed all BDI items were matched exactly on individual cognitive/affective symptom scores, sex, and age.

Matching on sex was undertaken since gender may influence the proportion of cognitive/affective and somatic symptoms reported {{276 Delisle,V.C. 2012}}, and matching on age was undertaken because the post-MI patients were, on average, older than psychiatry patients. Thus, for males and females separately, for each individual cognitive/affective score on the BDI (0, 1, 2, and so forth), all post-MI patients or psychiatry outpatients were included from the group with fewer patients with that score. Then, the same number of participants from the other group with the same cognitive/affective score was included. We selected the youngest patients for each cognitive/affective score for the post-MI sample and the oldest for the psychiatry outpatient sample. For example, if there were 10 post-MI patients and 15 psychiatry outpatients with a cognitive/affective score of 5, then all 10 post-MI patients were selected along with the oldest 10 psychiatry outpatients.

Measure

Symptoms of depression were assessed using the 21-item BDI [24]. BDI items consist of four statements, scored 0 to 3, with higher scores indicating increasing symptom severity. Respondents are instructed to describe the way they have been feeling during the past week. There is extensive evidence for the reliability and validity of the BDI in both psychiatric and non-psychiatric populations {{263 Beck,Aaron T. 1988}}, including post-MI patients {{244 Davidson,K.W. 2006}}.

Based on a review of existing factor models {{263 Beck,Aaron T. 1988}} and item content, scores on items 1-10 and 12-14 (*sadness, pessimism, sense of failure, self-dissatisfaction, guilt, punishment, self-dislike, self-accusations, suicidal ideas, crying, social withdrawal, indecisiveness, body image change*) were summed to calculate cognitive/affective symptom scores. Items 11 and 15-21 (*irritability, work difficulty, insomnia, fatigability, loss of appetite,*

weight loss, somatic preoccupation, loss of libido) were summed to calculate somatic symptom scores.

Analysis of the Data

To test whether somatic symptom scores on the BDI differed between post-MI patients with MDD and matched psychiatry outpatients with MDD at different levels of cognitive/affective symptom scores and overall, independent samples 2-tailed *t*-tests were used. The standardized mean difference for overall somatic scores was calculated using the Hedges's *g* statistic {{275 Hedges,L. V. 1982}}. Differences in somatic symptom item scores between post-MI patients and matched psychiatry outpatients were similarly compared with independent samples 2-tailed *t*-tests. Hochberg's Sequential Method was used to maintain a family-wise Type I error rate of $\alpha < .05$ for multiple item comparisons. Hochberg's Sequential Method is a modified Bonferroni approach that is more powerful than the standard Bonferroni correction. In Hochberg's Sequential Method, comparisons are conducted and then ordered according to their p-values (largest to smallest). The first comparison is evaluated at $\alpha = .05$, the second comparison is evaluated at $\alpha = .025$ (i.e., .05/2), the third comparison is evaluated at $\alpha = .017$ (i.e., .05/3), and so forth. Once a comparison in this sequence is found to be statistically significant, the procedure stops and all comparisons with smaller p-values are also deemed to be statistically significant.

Several sensitivity analyses were conducted. First, to supplement the main analysis, we analyzed data from all patients, rather than just matched patients, by regressing somatic symptom scores on group, controlling for cognitive/affective symptom scores. Second, because item 11 (*irritability*) may not be a somatic symptom, we analyzed whether removing this item from calculations of somatic symptom scores would change the main results of the study. To do this,

we calculated somatic scores using only items 15 to 21 (*work difficulty, insomnia, fatigability, loss of appetite, weight loss, somatic preoccupation, loss of libido*) and then tested whether these scores differed between post-MI patients and matched psychiatry outpatients overall, using independent samples 2-tailed *t*-tests. Third, because of a post-matching difference in age between the two groups, the overall somatic symptom scores of post-MI patients and matched psychiatry outpatients were compared using ANCOVA to adjust for age. Fourth, because psychiatry outpatients completed the BDI between 1972 and 1998, whereas post-MI patients completed the BDI from 1996 to 1999, we tested whether the year of evaluation was associated with somatic symptom scores among psychiatry outpatients, by regressing somatic scores on year of evaluation, controlling for cognitive/affective symptom scores. Finally, we tested whether, among post-MI patients, cardiac disease severity markers were associated with somatic symptom scores. To do this, we separately regressed somatic symptom scores on diabetes mellitus (present versus absent), history of MI (present versus absent), hypercholesterolemia (present versus absent), hypertension (present versus absent), and Killip class (II, III or IV versus I), controlling for cognitive/affective symptom scores in each case.

RESULTS

Sample Characteristics

Prior to matching, mean BDI total scores were 21.1 (SD = 8.5) for 783 post-MI patients with MDD and 23.1 (SD = 10.5) for 2,232 psychiatry outpatients with MDD ($p < .001$). Mean age for the post-MI patients was 59.1 years (SD = 12.2), and 396 (51%) were male. For the psychiatry outpatients, mean age was 36.6 years (SD = 12.0), and 839 (38%) were male.

There were 579 post-MI patients (74% of all post-MI patients) and 579 psychiatry outpatients (26% of all psychiatry outpatients) successfully matched based on BDI

cognitive/affective symptom scores, sex, and age. Post-match mean BDI total scores were 22.6 (SD = 8.8) for post-MI patients and 19.2 (SD = 9.7) for psychiatry outpatients ($p < .001$). Mean age was 54.4 years (SD = 9.9) for post-MI patients and 51.2 years (SD = 9.7) for psychiatry outpatients ($p < .001$). There were 300 (52%) males in both samples. Sociodemographic and clinical characteristics of the matched post-MI patients and psychiatry outpatients are shown in Table 1.

BDI Somatic Symptoms of Post-MI Patients versus Psychiatry Outpatients

Somatic symptoms accounted for 47% of BDI total scores for the 579 post-MI patients versus 37% for the matched psychiatry outpatients, a raw difference of 10%. BDI somatic symptom scores of post-MI patients were on average 3.4 points higher than those of psychiatry outpatients (95% confidence interval [CI] = 3.0 to 3.9; $p < .001$), a difference that is equivalent to 15% of the total BDI scores of post-MI patients. The standardized mean difference in somatic scores corresponded to a Hedges's *g* of 0.87. The results of the analysis were similar when item 11 (irritability) was removed from calculations of somatic symptom scores (somatic score difference = 3.1, 95% CI = 2.7 to 3.6, $p < .001$) or when controlling for age (somatic score difference = 3.1, 95% CI = 2.7 to 3.5, $p < .001$). In addition, the results did not change substantively when somatic scores were regressed on cognitive/affective scores and group for all patients, rather than just matched patients (somatic score difference = 3.3, 95% CI = 3.0 to 3.6, $p < .001$). Post-MI patients had statistically significantly higher somatic scores than psychiatry outpatients at all cognitive/affective symptom score levels (Table 2). Among psychiatry outpatients, year of evaluation was correlated equally with somatic ($r = -0.1$) and cognitive/affective ($r = -0.1$) scores. Year of evaluation was not significantly associated with

somatic scores, controlling for cognitive/affective scores (p = 0.143). As shown in Table 3, adjusting for multiple analyses, post-MI patients had statistically significantly higher scores on somatic symptom items 11(*irritability*), 15 (*work difficulty*), 16 (*insomnia*), 17 (*fatigability*), 18 (*loss of appetite*), 19 (*weight loss*), and 20 (*somatic preoccupation*), but not on item 21 (*loss of libido*).

Among post-MI patients, the presence of diabetes mellitus was associated with a 0.8 point increase (95% CI = 0.3 to 1.4, p = .004) in somatic symptom scores, controlling for cognitive affective scores. There were also significantly higher somatic symptom scores among patients with a previous MI (0.7 points, 95% CI 0.0 to 1.3, p = .037), hypertension (0.9 points, 95% CI 0.4 to 1.5, p = .002), and Killip class II-IV (1.7 points, 95% CI 1.0 to 2.4, p < .001). Hypercholesterolemia was not significantly associated with somatic symptom scores (p = .813).

DISCUSSION

The main finding of this study was that somatic symptom scores on the BDI of post-MI patients with MDD were, on average, more than 3 points higher than those of psychiatry outpatients with MDD who were matched exactly on individual cognitive/affective symptom scores, as well as sex and age. This 3-point difference is equivalent to almost 9/10 of a standard deviation (standardized mean difference = 0.86), which is a large difference based on Cohen's operational definitions (small = 0.2, medium = 0.5, large = 0.8) {{277 Cohen,J. 1988}}. This difference was equivalent to 15% of total post-MI patient BDI scores. There were significant differences between post-MI patients and matched psychiatry outpatients on all somatic symptom items, with the exception of item 21 (*loss of libido*). Among post-MI patients, somatic symptom scores were significantly associated with diabetes mellitus, previous MI, hypertension, and Killip class > I. Patients with Killip class > I scored almost 2 points higher on BDI somatic symptom

scores, controlling for cognitive/affective symptom scores.

These findings are consistent with results reported in a previous study that compared somatic symptom reporting on the BDI among post-MI patients and psychiatry outpatients without MDD {{278 Delisle, VC. In press}}. In that study, somatic symptom scores of post-MI patients were, on average, more than one point higher than those of psychiatry outpatients matched on cognitive/affective symptom scores, sex, and age, a difference that was equivalent to 14% of total BDI scores of post-MI patients. The findings of these two studies differ, however, from a study that used similar methods to compare somatic symptom reporting on the revised BDI-II among post-MI patients and psychiatry outpatients {{250 Thombs,B.D. 2010}}. That study found no difference in somatic symptom reporting between the two groups. Taken together, the findings of these studies suggest that scores on the BDI, but not the BDI-II, of hospitalized post-MI patients may disproportionately reflect symptoms that commonly result from the acute medical event or its treatment, rather than from depression.

Many previous studies show that higher scores on the BDI in hospitalized post-MI patients are associated with worse prognosis {{235 Meijer,A. 2011}}. If these scores at least partially reflect symptoms of the cardiac event or its treatment rather than depressed mood, it is reasonable to consider whether the prognostic value of the BDI in this context may, at least in part, relate to factors other than depression. It is interesting to note that no prior study has shown that higher scores on the BDI-II in hospitalized post-MI patients are significantly associated with prognosis, adjusting for other cardiac risk factors. Among studies included in a recent meta-analysis of post-MI depression and cardiovascular outcomes {{235 Meijer,A. 2011}}, only two studies {{307 Steeds,R.P. 2004; 295 Lauzon,C. 2003}} used the BDI-II and neither study found a significant relationship between symptoms of depression and cardiovascular prognosis. It should

be noted that one of the two studies incorrectly reported using the BDI, rather than the BDI-II, in the original study {{295 Lauzon,C. 2003}}, but that it was later clarified that the BDI-II had been used {{250 Thombs,B.D. 2010}}.

Results from the two studies on the BDI also raise the possibility that estimates of the prognostic association of symptoms of depression assessed with the BDI and outcomes following MI could be inflated due to biases in the measurement of depressive symptoms. Four studies {{257 Roest,A.M. 2011; 256 Martens,E.J. 2010; 255 Linke,S.E. 2009; 254 de Jonge,P. 2006}} have compared the prognostic association of somatic and cognitive/affective symptoms of depression assessed with the BDI with post-MI outcomes and all have reported that somatic symptoms, but not cognitive/affective symptoms, predicted negative cardiovascular outcomes. In a recent study of 528 hospitalized post-MI patients, BDI somatic symptoms overlapped with vital exhaustion to such a high a degree that the authors proposed they may represent the same construct. A factor comprised of BDI somatic symptoms and vital exhaustion significantly predicted new cardiovascular events, whereas BDI cognitive/affective symptoms did not {{302 Vroege,E.M. 2012}}. In contrast to the findings of studies with the BDI, a study of 226 coronary artery bypass graft patients that used the BDI-II found that cognitive/affective symptoms but not somatic symptoms predicted cardiac morbidity and mortality {{262 Tully,P.J. 2011}}.

The degree to which somatic symptoms from medical illness may influence depression scores on self-report measures is likely measure-specific and should be assessed on a measure-by-measure basis. For instance, both the BDI and the BDI-II assess somatic symptoms of depression, but, unlike the BDI, the BDI-II does not appear to be unduly influenced by inclusion of these symptoms. One possible reason for this is that there are fewer somatic symptom items included in the BDI-II compared to the BDI. Indeed, the number of somatic symptoms was

intentionally reduced in developing the BDI-II {{271 Beck,A. T. 1996}}. Another possible reason is that the BDI requires that symptoms be present for one week or longer, whereas the BDI-II requires that they be present for a minimum of two weeks. The longer time period of assessment built into the BDI-II may reduce the influence of acute symptoms from an MI or its treatment.

Given that somatic symptoms from medical illness may influence scores on some depression measures, it is tempting to consider excluding somatic symptoms from depression symptom assessments. Indeed, self-report depression symptom questionnaires that do not include somatic symptoms have been developed. The Hospital Anxiety and Depression Scale (HADS) {{280 Zigmond,A.S. 1983}} is an example of one of these measures. The HADS is a 14-item self-report anxiety and depression symptom questionnaire that was developed based on the belief that anhedonia is the core symptom of biologically influenced depression and the most robust indicator of when antidepressant medications should be prescribed {{281 Snaith,R.P. 1987}}. Consistent with this, 5 out of the 7 depression symptom items on the HADS assess anhedonia. The HADS has been criticized, however, because it does not sufficiently differentiate between anxiety and depression in some studies and because of and its poor performance in identifying patients with depression in many patient groups {{283 Coyne,J.C. 2012; 282 Cosco,T.D. 2012}}. Depression is a multifaceted construct, and validated instruments that assess the full spectrum of symptoms without being overly influenced by somatic symptoms not necessarily related to depression are preferable. Clinically, however, it is important to take care to not weigh somatic symptoms such as appetite and fatigue too heavily without first clarifying the origin of these symptoms.

Several limitations should be considered in interpreting results from this study. One is that

the post-MI and psychiatry outpatient samples were drawn from different settings. Although both samples were closely matched on key variables (cognitive/affective symptom scores, sex, and age), it is possible that differences in other variables, such as co-morbid physical and psychiatric problems and differences in the method of diagnosing MDD, may have influenced the results. However, the most likely bias, given the age of the psychiatry outpatients, would have been with regard to physical problems, and this would actually be expected to dampen the difference between the groups. Furthermore, the results of this study and a study that used a different comparison sample were highly similar {{278 Delisle, VC. In press}}. In addition, the results of this study, as well as those from a study on the BDI-II that did not find differences in somatic symptom reporting {{250 Thombs,B.D. 2010}}, are consistent with what would be expected given that the BDI was revised to reduce the influence of somatic symptoms on depression symptom scores. A second limitation is that data for the post-MI and psychiatry outpatient samples were collected over somewhat different time periods. While it is possible that the time of assessment may have affected the number of symptoms reported, there is no obvious reason that it would have affected the composition of symptoms. Furthermore, a sensitivity analysis showed that the year of evaluation did not influence the relationship between BDI somatic scores and BDI cognitive/affective scores among psychiatry outpatients. A third possible limitation is that information on the clinical comorbidities of psychiatry outpatients was not available. To the degree to which psychiatry outpatients may have had medical conditions, this may have reduced potential differences in somatic symptom reporting between hospitalized post-MI and psychiatry outpatients, suggesting that the difference we reported from this study may be conservative.

In summary, this study found that somatic symptom scores on the BDI are significantly higher among post-MI patients with MDD than among psychiatry outpatients with MDD

matched exactly on individual cognitive/affective symptom scores, sex, and age. Somatic symptom scores were also substantially higher among post-MI patients with more severe cardiac disease (e.g., Killip class).These results, as well as those from two previous studies {{278 Delisle, VC. In press; 250 Thombs,B.D. 2010}}, suggest that assessing depressive symptoms with the BDI, compared to the BDI-II, following an MI may be more likely to inflate depression symptom severity scores due to the misattribution of somatic symptoms from the MI to depression. Furthermore, these results suggest that the BDI-II is preferable among cardiovascular disease patients and that the BDI would ideally not be used in this setting.

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Table I. Sociodemographic and Clinical Characteristics of Matched Post-MI patients and Psychiatry Outpatients

	Post-MI Patients (N = 579)	Psychiatry Outpatients (N = 579)
Sociodemographic Characteristics		
Age in years, mean (SD)	54.4 (9.9)	51.2 (9.7)
Male, n (%)	300 (51.8)	300 (51.8)
Clinical Characteristics[a]		
Diabetes mellitus, n (%)	216 (37.9)[b]	-----
History of MI, n (%)	153 (27.3)[c]	-----
Hypercholesterolemia, n (%)	325 (63.0)[d]	-----
Hypertension, n (%)	365 (64.4)[e]	-----
Killip class I, n (%)	402 (78.1)[f]	-----

MI = myocardial infarction.

[a]Clinical characteristics of post-MI patients were obtained via their hospital charts by a research nurse. [b]n = 570. [c]n = 560. [d]n = 516. [e]n = 567. [f]n = 515.

Table II. Comparison of BDI Somatic Symptom Scores of Post-MI Patients and Matched Psychiatry Outpatients

	Post-MI Patients				Psychiatry Outpatients				Somatic Score Comparison	
Cognitive/ Affective Scores	n	Mean Cognitive/ Affective Scores[a]	Mean Somatic Scores[a]	Somatic as Proportion of Total Scores	n	Mean Cognitive/ Affective Scores[a]	Mean Somatic Scores[a]	Somatic as Proportion of Total Scores	Difference in Somatic Scores	p-value
0-6	114	3.87	8.30	68.2%	114	3.87	3.34	46.3%	4.96	< .001
7-9	108	8.04	9.41	53.9%	108	8.04	5.50	40.6%	3.91	< .001
10-12	117	10.90	10.75	49.7%	117	10.90	6.85	38.6%	3.90	< .001
13-17	134	14.68	11.39	43.7%	134	14.68	8.87	37.7%	2.52	< .001
18+	106	22.58	13.01	36.6%	106	22.58	11.22	33.2%	1.79	.001
Total	579	11.99	10.58	46.9%	579	11.99	7.17	37.4%	3.41	< .001

BDI = Beck Depression Inventory. MI = myocardial infarction.

[a]Definitions of cognitive/affective and somatic scores in text. Mean cognitive/affective scores were the same for post-MI patients and psychiatry outpatients across cognitive/affective score categories because patients were matched exactly on individual cognitive/affective scores, as well as sex and age.

Table III. Comparison of BDI Somatic Symptom Item Scores of Post-MI Patients and Matched Psychiatry Outpatients

BDI Item	Post-MI Patients (Mean/SD)	Psychiatry Outpatients (Mean/SD)	Difference in Somatic Item Scores[a]	p-value
11. Irritability	1.19/0.81	0.92/0.77	0.27	< .001[b]
15. Work difficulty	1.58/0.85	1.26/0.81	0.32	< .001[b]
16. Insomnia	1.70/1.03	1.27/1.04	0.43	< .001[b]
17. Fatigability	1.72/0.83	1.10/0.82	0.62	< .001[b]
18. Loss of appetite	1.06/1.00	0.49/0.77	0.57	< .001[b]
19. Weight loss	0.88/1.12	0.32/0.73	0.56	< .001[b]
20. Somatic preoccupation	1.26/0.95	0.66/0.81	0.60	< .001[b]
21. Loss of libido	1.18/1.21	1.15/1.10	0.03	.647

BDI = Beck Depression Inventory. MI = myocardial infarction.

[a]Definition of somatic scores in text. [b]Statistically significant based on Hochberg's Sequential Method.