

Depression Assessment in Brazil The First Application of the Montgomery-Åsberg Depression Rating Scale

L. DRATCU, L. da COSTA RIBEIRO and H. M. CALIL

Cross-cultural investigation in psychiatry is revealing the need for standardised instruments in diagnosing and assessing depression. Recently, a new instrument was developed to evaluate depressed patients, namely the Montgomery-Åsberg Depression Rating Scale (MADRS). The present study introduced the MADRS in Brazil, comparing it to the Hamilton Depression Rating Scale, the Visual Analogue Mood Scale (a self-rating scale), and with the global clinical assessment of independent Brazilian psychiatrists. The results show correlation between MADRS and the three other assessments, indicating that it is a useful and operational instrument to evaluate depressed patients. They also support the application of the MADRS in cross-cultural studies of depression in Brazil and other countries. These results are critically discussed.

Adequate epidemiologic data are necessary for planning mental health care programs (Sartorius, 1976). Thus, standardised diagnostic criteria and rating scales seem to be operational instruments, as they allow a common language between researchers and practitioners, as well as comparative studies of mental diseases in different cultural settings (Jablensky *et al*, 1981; Sartorius *et al*, 1983).

Cross-cultural studies have revealed that depressive disorders constitute a public health problem in most societies. However, there is still little coordination among the various institutions and workers in this field (Sartorius, 1974; Jablensky *et al*, 1981). Thus, the introduction of cross-culturally applicable methods, such as depression rating scales (Hamilton, 1960, 1967; Beck *et al*, 1961; Zung, 1965; Carney & Sheffield, 1972; Folstein & Luria, 1973) would allow the conjugation of efforts in several countries. Since its introduction, the Hamilton Depression Rating Scale (HDRS) has had a widespread use and has been considered a standard instrument to assess depressive symptoms, and even to compare with other rating scales (Carroll *et al*, 1973). A few cross-cultural studies have analysed rating scales performance in different societies (Zung, 1969; Åsberg *et al*, 1973).

The Comprehensive Psychopathological Rating Scale (CPRS) is a rating scale, recently elaborated, to be sensitive to changes in symptoms induced by several psychiatric treatments (Åsberg *et al*, 1978). It was applied to English and Swedish patients (Montgomery *et al*, 1978), the most frequent symptoms of primary depressive disorders were identified, and finally rearranged as the Montgomery-Åsberg Depression Rating Scale (MADRS)

(Montgomery & Åsberg, 1979). Therefore, the MADRS cross-cultural English and Swedish roots suggest its adequacy for studies on depression in different societies. Thus, it was applied to a Brazilian depressed population, and its performance compared with those of the HDRS, the Visual Analogue Mood Scale (VAMS), and the global clinical assessment (Dratcu *et al*, 1985).

The present paper reports on further data from the first application of the MADRS in Brazilian depressed patients, comparing its performance with those from the HDRS and VAMS. Furthermore, the rating scales evaluation will be compared with the independent clinical assessment of depression prevalent in a group of Brazilian psychiatrists.

Method

The study was carried out at the Department of Psychiatry and Medical Psychology, Hospital do Servidor Público Estadual "Francisco Morato de Oliveira", São Paulo, where there are three care modalities: in-patient, day-hospital and out-patient facilities.

Subjects were patients consecutively admitted by the staff-psychiatrists to the three care facilities, during a 6-month period, and diagnosed as depressed according to several clinical criteria. Their treatment and prescription were the staff-psychiatrists' responsibility. Those who, after being informed, consented to participate in the study were re-evaluated, within 1 week of admission, by two trained and independent psychiatrists. A total of 40 patients (60-70% of the interviewed depressed patients) met the criteria for Major Depressive Disorder (MDD) of the Research Diagnostic Criteria (RDC; Spitzer *et al*, 1980).

The re-evaluation interview, lasting an average of 75 min, included the application of three depression rating scales

TABLE I
Mean scores \pm s.d. and variation range (in parens) of MADRS, HDRS, and VAMS of depressed patients

	MADRS	HDRS	VAMS
Evaluation			
First (<i>n</i> = 40)	38.5 \pm 8.1 (23-55)	31.2 \pm 6.1 (12-41)	20.7 \pm 22.6 (88-0)
Second (<i>n</i> = 10)	12.9 \pm 16.1* (02-51)	12.0 \pm 12.9* (03-43)	61.5 \pm 31.4** (91-00)
Possible variation	0-60	0-52	100-0

The first evaluation was carried out within 1 week from beginning of treatment (*n* = 40), whereas the second (*n* = 10) occurred after week 4 of antidepressant therapy or at the end of an ECT series. Paired *t*-test, one-tailed of first and second evaluations: (**P* < 0.001; ***P* = 0.005).

TABLE II
MADRS, HDRS and VAMS mean scores \pm s.d. of depressed patients (*n* = 40) admitted, according to clinical assessment, to the hospital, day-hospital or out-patient clinic

	Hospital (<i>n</i> = 18)	Day-hospital (<i>n</i> = 5)	Out-patient clinic (<i>n</i> = 17)
MADRS	45.2 \pm 5.6	36.0 \pm 4.9*	32.2 \pm 4.3*
HDRS	36.2 \pm 3.3	27.4 \pm 3.4*	27.1 \pm 5.0*
VAMS	13.9 \pm 19.1	17.8 \pm 21.3	28.6 \pm 23.8

Duncan's multiple range test showed difference between day-hospital and out-patient clinic groups compared with the hospital group (**P* < 0.01)

to the patients who met the RDC criteria for depression: Montgomery-Åsberg Depression Rating Scale (MADRS), Hamilton Depression Rating Scale (HDRS) and a self-rating scale, the Visual Analogue Mood Scale (VAMS). A second re-evaluation (clinical global assessment and the three rating scales application), of ten of the 40 patients, was carried out 4 weeks from the beginning of antidepressant treatment or at the end of an electroconvulsive therapy (ECT) series.

The scores of the three rating scales were analysed taking the group mean and the standard-deviation. Correlation between the scales scores was obtained with the Pearson's correlation coefficient. MADRS, HDRS and VAMS mean scores from in-patient, day-hospital and out-patient groups were compared with the Duncan's Multiple Range Test (Steel & Torrie, 1960).

Results

Of the total 40 patients with the RDC diagnosis of Major Depressive Disorder (MDD), 30 were women and 10 were men. Their mean age was 53 \pm 12.9 years (\pm standard deviation, s.d.), and ranged from 23 to 77 years. The subtypes of MDD were: primary (*n* = 37), secondary (*n* = 3), recurrent (*n* = 17), psychotic (*n* = 8), incapacitating (*n* = 29), endogenous (*n* = 39), agitated (*n* = 11), retarded (*n* = 23), situational (*n* = 10) and simple (*n* = 37). Eighteen were in-patients, five were being treated at the day-hospital facility, and seventeen were attending the out-patient clinic.

The mean scores of the rating scales at the first re-evaluation (*n* = 40) as well as the possible variation range, are shown in Table I. The highest MADRS and HDRS scores

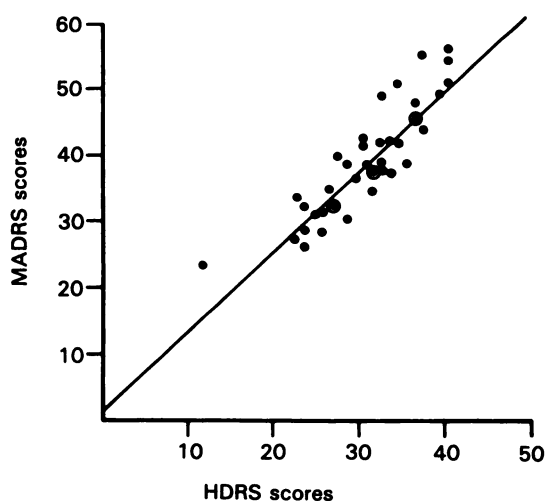


FIG. 1 Correlation (*r* = 0.89, *P* < 0.01) between the total scores of 40 patients assessed with the Hamilton Depression Rating Scale (HDRS), and the Montgomery-Åsberg Depression Rating Scale (MADRS).

point towards a more severe depressive symptomatology, whereas the VAMS scores go the opposite way: lowest scores rate indicates worst mood. The MADRS mean score was 38.5 \pm 8.1 (s.d.), with a variation from a minimal score of 23 to a maximal score of 55. The HDRS mean score was

31.1 ± 6.1 (s.d.); the lowest score was 12, and the highest 41. The VAMS mean score was 20.7 ± 22.6 (s.d.), with scores ranging from 88 through 0 mm. The correlation between MADRS and HDRS scores was positive and significant ($r = 0.89$, $P < 0.01$) and is shown in Fig. 1. The correlations between MADRS and VAMS, and HDRS and VAMS were, as expected, negative and significant ($r = -0.41$, $P < 0.02$; $r = -0.50$, $P < 0.01$, respectively).

The MADRS, HDRS and VAMS mean scores from the second re-evaluation ($n = 10$) are also shown in Table I. The scores obtained with the three scales were different from those of the first re-evaluation (paired t -test, one-tailed, MADRS: $t = 5.13$, HDRS: $t = 5.00$; VAMS: $t = 3.20$; $P \leq 0.005$) although the highest scores of the variation range remained almost the same. There was a significant and high correlation between the three scales scores: MADRS × HDRS ($r = 0.996$, $P < 0.01$) MADRS × VAMS ($r = 0.919$, $P < 0.01$) and HDRS × VAMS ($r = -0.925$, $P < 0.01$).

The MADRS and HDRS mean scores of the in-patient group were significantly higher than those obtained from the day-hospital and out-patient groups (Duncan's Multiple Range Test, $P < 0.01$) (Table II). There were no significant differences between MADRS and HDRS mean scores of day-hospital and out-patient groups, although the day-hospital group mean scores were higher than those of the out-patient group. The VAMS mean score of the in-patient group was lower than those of the day-hospital and out-patient groups, but these differences also did not reach statistical significance.

Discussion

The sex and age characteristics of the depressed patient sample studied correspond to those reported in the classical psychiatric literature.

All the patients, except one, met the RDC criteria for the endogenous subtype of Major Depressive Disorder. In fact, a careful analysis and the practical application of these diagnostic criteria led to the observation of an overlap of them for the diagnosis of Major Depressive Disorder and its endogenous subtype. Both the RDC and the Diagnostic and Statistical Manual of Mental Disorders, (3rd edition) (DSM-III, American Psychiatric Association, 1980) still constitute matter of discussion and controversy, and should not be used as a 'gold standard' for diagnosis (Klerman *et al*, 1984). It is feasible that the staff-psychiatrists have emphasised the features of endogeneity in diagnosing depression, as they are closer to the classical description of melancholia. Thus, non-endogenous depressed patients might have been previously excluded from this study. In addition, almost half of these patients had been admitted to the hospital, probably because they were considered by the staff-psychiatrists as severely depressed. Therefore, this study have included patients with more severe depression, perhaps due to the endogenous features of their depressive disorders. Anyway, the experimental design (double diagnostic

selection), and the results found (sex and age distribution, predominance of endogenous depression, and high HDRS mean score) point towards the reliability of the diagnosis of depression.

The high correlation between MADRS and HDRS scores indicates that both scales are equally consistent instruments to evaluate the intensity of depressive symptoms. However, some differences between them seem important. The HDRS has 17 items while the MADRS only has 10, and is apparently simpler. Every MADRS item rates on a 6-point scale, and there are intermediate points between them. Thus, the rater has more flexibility to assess and decide on the rating of those symptoms which do not correspond exactly to those described. Furthermore, the MADRS discriminates between observed and reported symptoms avoiding doubts which could mislead the evaluation. In addition, the MADRS does not emphasise somatic symptoms as much as the HDRS does, therefore minimising the interference of organic disfunctions or treatment side-effects. Finally, the MADRS does not present contradictory items, such as those found in the HDRS (e.g. inhibition and agitation), which make virtually impossible the maximal score (52 points). The HDRS highest score in this study was 41 (79% of the maximal possible score), whereas the MADRS highest score was 55 (92% of the maximal possible). Some of these HDRS limitations have been already observed, discussed, and modifications made to improve it (Bech *et al*, 1981; Miller *et al*, 1985). Thus, the MADRS would be more sensitive to subtle and earlier changes in symptoms. In fact, it might contribute to its capacity to evaluate treatment responses, specially of severely depressed patients, with a higher precision and precedence. It confirms its sensitivity to treatment-induced changes in symptoms, the main purpose of the scale developers (Montgomery & Åsberg, 1979).

The negative correlation between the VAMS and the Montgomery-Åsberg and Hamilton Scales, applied by the raters, indicates that both follow the patients self-rating. However, the high self-rating standard deviation value reveals the individual variability, as the way of filling in the VAMS differs from one patient to the other.

There was a decrease in intensity of symptoms, as might have been expected, in the mean scores of the three scales applied to ten of the 40 patients during the post-treatment re-evaluation. Eight patients improved with tricyclic antidepressants or electroconvulsive therapy, whereas the remaining two (one received an antipsychotic, and the other nomifensine) did not. Consequently, their MADRS and HDRS scores have not changed. It explains the practically

unchanged high value of the variation range as well as the high standard deviation.

The higher correlation between the scales found at the re-evaluation was obviously due to the decrease of number and intensity of the remaining symptoms. Therefore, the three scales were sensitive enough to evaluate treatment-induced changes. Nevertheless, the MADRS and the HDRS seem to offer advantages, as they allow to a better quantification of these changes.

The global clinical assessment of depression is reflected on the staff-psychiatrists' choice of the treatment care program. The patients considered as severely depressed were admitted to the hospital, those with a moderate depression were admitted to the day-hospital, and those with a mild depression were followed at the out-patient clinic. The MADRS, HDRS and VAMS scores accompanied the staff-psychiatrists clinical assessment, as the rated symptoms intensity was indeed in the same order of patients grouping. The mean scores differences did not reach statistical significance for all the groups probably because of the limited sample size. Thus, if the sample size were increased, the found correlation between the global clinical assessment and the three rating scales scores would become more evident.

Finally, the Montgomery-Åsberg Depression Rating Scale, as adequate as the Hamilton Depression Rating Scale, was a useful instrument to assess depression in a Brazilian depressed population sample, in spite of having been developed in an European context. Furthermore, it has some practical advantages, such as higher simplicity, specificity and sensibility than the HDRS. Therefore, it might be considered a valid instrument for research information exchange, as well as for cross-cultural studies on depression in Brazil and other countries.

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Luiz Dratcu, MD, Graduate Student in Psychopharmacology and Psychobiology; *Helena Maria Calil, MD, PhD, Associate Professor, *Department of Psychobiology, Escola Paulista de Medicina*; Lenine Da Costa Ribeiro, MD, Psychiatry Resident, *Department of Psychiatry and Medical Psychology, Hospital do Servidor Público Estadual "Francisco Morato de Oliveira"*, São Paulo, Brazil

*Correspondence: *Escola Paulista de Medicina, Rua Botucatu, 862 - 1º andar, 04023 - São Paulo - SP., Brazil*

BJPpsych

The British Journal of Psychiatry

Depression assessment in Brazil. The first application of the Montgomery-Asberg Depression Rating Scale.

L Dratcu, L da Costa Ribeiro and H M Caill

BJP 1987, 150:797-800.

Access the most recent version at DOI: [10.1192/bjp.150.6.797](https://doi.org/10.1192/bjp.150.6.797)

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