Quick rating of depressed mood in patients with anxiety disorders

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Background Regular assessment of mood is often important for treatment but traditional measures can be time-consuming. A quick 'litmus test' is needed.

Aims To test the reliability and validity of a single-item scale for mood.

Method Mood was measured repeatedly in 812 patients (258 in-patients, 554 out-patients) being treated in an anxiety disorders unit. Patients had self- and clinician ratings of a single-item depression scale and also rated the 21-item Beck Depression Inventory (BDI–21). Their single-item scores were compared with BDI–21 scores and with outcome measures.

Results The single-item depression scores correlated 0.71 to 0.78 with the BDI–21 scores. Clinically useful cut-off points were identified. Depression scores at discharge, but not pre-treatment, correlated significantly with improvement in the main problem.

Conclusions The quick single-item depression scale, whether rated by patient or by clinician, is a reasonable rough guide to mood in anxiety disorders and saves time for the patient and the clinician compared to longer measures.

Declaration of interest None.

Mood needs monitoring during the treatment of many disorders. Rating scales can help this task. Most depression measures, however, have many items and take the clinician and/or patient some minutes to complete. A quicker, reliable and valid guide to mood would save time in tracking progress. The value of single-item compared to longer measures of depression was noted in the terminally ill (Chochinov *et al*, 1997), in older adults (Mahoney *et al*, 1994) and in primary care (Berwick *et al*, 1991). This paper compares a single-item depression scale used by patient and by clinician with one another and with a longer more traditional mood measure and shows how they related to outcome. The scales were rated before and after routine behaviour therapy in patients with anxiety and related disorders in the Bethlem–Maudsley Hospital in London.

METHOD

The progress of 812 patients during everyday care was rated by the patients and by their clinicians on mood and other measures. Their diagnoses were: 258 consecutive in-patients: obsessive–compulsive disorder (OCD) 89%, phobia 7%, other 3%; 554 out-patients: OCD 29%, phobia 50%, other 21%. ('Other' comprises generalised anxiety disorder GAD (3%), post-traumatic stress disorder (4%), habit (4%), sex (4%) and related disorders amenable to treatment by behaviour therapy.) A single-item Depression Scale (Fig. 1) was rated by the patient (D1P) and the clinician (D1C). This scale was given on its own and was also self-rated as the first of six items in a version of the anxiety–depression subscale of the Fear Questionnaire (AD–6) (Marks & Mathews, 1979; Marks, 1986). Many of the patients also rated the 21-item Revised Beck Depression Inventory (BDI–21) (Beck *et al*, 1979). Patients took less than 15 seconds to complete the D1P but about five minutes to complete the BDI–21.

Ratings were fed into a computer at the in-patient unit and paper-and-pencil scales were transcribed onto a computer for most of the out-patients. The computerised and the paper-and-pencil versions of the scales were found to be equivalent (further details available from the authors upon request).

Test/re-test reliability of the D1P scale

The reliability of the D1P scale was estimated by comparing ratings of the D1P scale presented on its own with ratings of it presented as the first question in the AD–6. The D1P scale was presented both ways at pre- and mid-treatment and discharge, and at 1-, 3-, 6- and 12-month follow-up. Pearson's product-moment correlation coefficient (r) and Cohen's kappa were calculated for each occasion. The data came from 258 consecutive in-patients over six years.

Concurrent validity of the D1P

Validity of the D1P scale was tested using the BDI–21 and the D1C scale as yardsticks. Data for the D1P, BDI–21 and D1C scales were available at pre-treatment for 208 out-patients. Pearson's coefficient r was calculated between each pair of measures available.

To refine the analysis, a confirmatory hierarchical factor analysis model for the

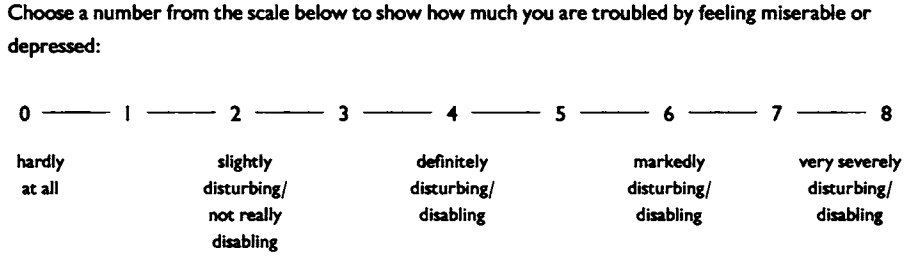

Fig. 1 The single-item depression scale.

Table 1 Values of kappa and *r* between the DIP scale and the first item of AD–6 for in-patients

			Follow-up			
	Pre-treatment (*n*=258)	Discharge (*n*=195)	1 month (*n*=137)	3 month (*n*=100)	6 month (*n*=69)	12 month (*n*=54)
Kappa	0.96	0.98	0.94	1.00	0.98	0.98
r	0.96***	0.96***	0.96***	1.00***	1.00***	0.97***

***$P<0.001$.

BDI–21 was constructed (Tanaka & Huba, 1984) using the EQS program (Bentler, 1989). This identified a 'true' depression factor underlying the BDI–21, and correlated scores on this factor with scores on the D1P scale.

The DIP scale as a predictor of outcome

The D1P scale was studied to establish its value as a predictor of outcome by comparing:

(a) the mean pre-treatment D1P scores of patients who reached discharge with the mean D1P scores of patients who dropped out;

(b) the correlations of the D1P scores at pre-treatment and at discharge with the scores of improvement in the main problem (self-rated) (Marks, 1986) from pre-treatment to discharge.

RESULTS

Values of kappa and *r* between the D1P scale given alone and as the first item of the AD–6 are shown at pre- and post-treatment and at follow-up in Table 1. Values close to unity imply that the D1P scale is equivalent whether given alone or as the first item of the AD–6, and has a very high test/re-test reliability.

The concurrent validity of the D1P scale is measured by correlations (*r*) between the D1P scale and the BDI–21 and D1C scale (Table 2) and between the D1P scale and the 'true' depression factor underlying the BDI in the out-patients.

The DIP scale correlated very highly with the D1C scale. The D1P scale also correlated 0.71 with the BDI–21; its correlation rose to 0.78 using the more sophisticated measure of a 'true' depression factor underlying the BDI, based on a four-factor confirmatory factor analysis model: the D1P scale was modelled by one factor and the BDI–21 by three first-order factors ('negative attitudes', 'performance difficulty', 'physiological') and one second-order factor ('depression') (Tanaka & Huba, 1984). The goodness of fit indices for this model were χ^2 (n=208, d.f.=202)=298, $P<0.001$, normed fit index=0.86, non-normed fit index=0.94, comparative fit index=0.95. These are satisfactory, because an index of 0.9 or more is usually taken to be an adequate fit.

For these 208 patients the range of D1P and D1C scores was 0–8 and the range of BDI–21 scores was 0–48. Linear regression gave the equation: D1P=1.07+0.171 × BDI–21 (β=0.71, $P<0.0001$). On a scatter plot, points were evenly dispersed about the regression line over the range. Using the BDI–21 as a 'gold standard', correspondence with recognised cut-off points was worked out (Table 3).

Two clinically useful cut-off points were: patients with moderate–severe depression or greater who were candidates for adjunctive therapy with antidepressants; and patients falling into the extremely severe group who were candidates for further assessment by a psychiatrist (most of the patients were treated by specialist nurse therapists). A D1P score of >4 as a test for the first group had a sensitivity of 73% and a specificity of 87%, while D1P>6 for the second group had a sensitivity of 71% and a specificity of 90%.

The DIP scale as a predictor of outcome

Pre-treatment ratings were available for 554 out-patients over five years. Of these, 157 had no discharge ratings and are called drop-outs; of these drop-outs the clinician's letter to the referring agent gave low mood as the reason in only 10 patients. At pre-treatment the mean D1P score for these 10 drop-outs was higher than for the 397 non-drop-outs: 6.7 (s.d. 1.83) *v.* 3.7 (s.d. 2.47); t=3.76, $P<0.001$. Where the clinician's letter did not mention low mood,

Table 2 Pearson's correlation coefficient *r* of the DIP scale with the DIC scale and with the BDI–21 at pre-treatment (*n*=208 out-patients)

	DIP	DIC	BDI–21
DIP	1.00		
DIC	0.91***	1.00	
BDI–21	0.71***	0.73***	1.00

***$P<0.001$.

Table 3 The DIP scores corresponding to recognised BDI–21 cut-off points

Depression	Not depressed	Mild–moderate	Moderate–severe	Extremely severe
BDI–21	0–9	10–18	19–29	30+
DIP	0–2	3–4	5–6	7–8

Table 4 Pearson's correlation coefficient *r* of the DIP and DIC scales at pre-treatment and at discharge with percentage improvement in the main problem (PI) at discharge (*n*=324 out-patients)

	PI (% improvement)	DIP pre-treatment	DIP discharge	DIC pre-treatment	DIC discharge
PI (% improvement)	1.00				
DIP pre-treatment	−0.06	1.00			
DIP discharge	−0.37***	0.53***	1.00		
DIC pre-treatment	−0.04	0.90***	0.46***	1.00	
DIC discharge	−0.34***	0.49***	0.86***	0.53***	1.00

***$P<0.001$.

drop-outs (n=147) and non-drop-outs (n=397) had similar scores on the D1P scale (3.74 *v.* 3.75). The pre-treatment D1P score thus predicted the small subset of patients who subsequently dropped out, with low mood given as the reason, but not drop-outs in general.

Pre-treatment D1P ratings did not correlate significantly with improvement in main problem at discharge (Table 4). Discharge D1P ratings, however, correlated significantly negatively (−0.37) with percentage improvement on the main problem at discharge, accounting for 14% of the variance.

At discharge, BDI–21 data were available on 44 patients (Table 5). Improvement in the main problem at discharge correlated more with the score at discharge of the D1P scale than of the BDI–21. Patients who were less depressed at discharge were those who had improved most by then on their main problem. Outcome did not relate to pre-treatment mood. Outcome of the main problem at discharge related best of all to the D1P score at discharge.

CLINICAL IMPLICATIONS

- A single-item depression scale is a reasonable rough guide to mood in patients being treated for anxiety disorders.
- Suitably chosen thresholds identify patients likely to benefit from treatment with antidepressants or to require further psychiatric assessment.
- A single-item measure saves time for patient and clinician.

LIMITATIONS

- The scale measures depressed mood, not disorder.
- The scale needs further study to test its value in tracking mood in depressive disorders as opposed to anxiety disorders.
- Concurrent validity was tested against the Beck Depression Inventory but not against other recognised measures of depression.

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DISCUSSION

The D1P scale correlated 0.71 with the BDI–21. Confirmatory factor analysis to identify 'true' depression as the latent factor underlying the BDI–21 yielded a correlation of factor scores with the D1P scale of 0.78. The D1P scale thus shared 50–61% of the variance with the BDI–21. The D1P scale correlated fully 0.91 with the D1C scale, implying very high agreement between patients' and clinicians' judgements of depressed mood. With suitable cut-off points, the D1P scale identified clinically important thresholds, defined by the BDI–21, with acceptable sensitivity and specificity. The BDI–21 reliably measures depression in a range of DSM diagnoses and differentiates depressive disorders from generalised anxiety disorders (Steer *et al*, 1986).

The D1P scale at pre-treatment predicted the few patients who later dropped out, with low mood given as the reason by the treating clinician. More improvement in the main problem at discharge related to normal mood on the D1P scale at discharge, but not to mood at pre-treatment. The BDI–21 fared less well as a predictor.

Given their value in older adults (Mahoney *et al*, 1994), in the terminally ill (Chochinov *et al*, 1997) and in adults with anxiety and related disorders (present study), single-item measures of mood deserve wider use and study of their utility in primary depression. They can be rated

Table 5 Pearson's correlation coefficient r of the DIP and DIC scales and the BDI–21 at pre-treatment and at discharge with percentage improvement in the main problem (PI) at discharge (n=44)

	PI (% improvement)	DIP pre-treatment	DIP discharge	DIC pre-treatment	DIC discharge	BDI–21 pre-treatment	BDI–21 discharge
PI (% improvement)	1.00						
DIP pre-treatment	−0.12	1.00					
DIP discharge	−0.54***	0.46***	1.00				
DIC pre-treatment	−0.16	0.97***	0.49***	1.00			
DIC discharge	−0.51***	0.48***	0.96***	0.53***	1.00		
BDI–21 pre-treatment	−0.21	0.75***	0.50***	0.77***	0.59***	1.00	
BDI–21 discharge	−0.38**	0.52***	0.77***	0.55***	0.79***	0.74***	1.00

**P<0.01; ***P<0.001.

in seconds rather than in the minutes needed for longer traditional measures.

In brief, the single-item depression scale, whether rated by patient or by clinician, is a reasonable rough guide to mood during treatment of patients with anxiety disorder. Using this quick single-item scale instead of longer measures saves time for the patient and the clinician.

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