Severity of depressive episodes according to ICD–10: prediction of risk of relapse and suicide

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Background The ICD–10 categorisation of severity of depression into mild, moderate and severe depressive episodes has not been validated.

Aims To validate the ICD–10 categorisation of severity of depression by estimating its predictive ability on the course of illness and suicidal outcome.

Method All psychiatric in-patients in Denmark who had received a diagnosis of a single depressive episode at their first discharge between 1994 and 1999 were identified. The risk of relapse and the risk of suicide were compared for patients discharged with an ICD–10 diagnosis of a single mild, moderate or severe depressive episode.

Results At their first discharge, 1103 patients had an ICD–10 diagnosis of mild depressive episode, 3182 had a diagnosis of moderate depressive episode and 2914 had a diagnosis of severe depressive episode. The risk of relapse and the risk of suicide were significantly different for the three types of depression – increasing from mild to moderate to severe depressive episode.

Conclusions The ICD–10 way of grading severity is clinically useful and should be preserved in future versions.

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During the past two decades there has been an increasing focus on the long-term course of recurrent depression. Several studies have found that the risk of subsequent relapse or recurrence increases with the severity of the depressive index episode, measured as the score on a rating scale (Gonzales *et al*, 1985; Ramana *et al*, 1995; Staner *et al*, 1997) or as the number of recalled depressive symptoms (Coryell *et al*, 1991). In the ICD–10 (World Health Organization, 1992), depression is categorised into mild, moderate and severe depression. Although the way ICD–10 classifies severity has been praised and is recommended to be preserved in future versions (Paykel, 2002), the long-term predictive ability of this subdivision has not been investigated.

The aim of our study was to investigate whether the ICD–10 categorisation into diagnoses of mild, moderate and severe depression at discharge from first admission predicted the risk of relapse and eventual suicide. As in prior studies (e.g. Kessing, 1998; Kessing *et al*, 1998) we used the Danish Psychiatric Central Register as our database, with survival statistics to estimate the risk of relapse and suicide.

METHOD

Psychiatric register

The Danish Psychiatric Central Register is nationwide, with registration of all psychiatric admissions in Denmark for the 5.3 million inhabitants (Munk-Jorgensen & Mortensen, 1997). All inhabitants in Denmark have a unique personal identification number, the Civil Person Registration number, which can be logically checked for errors, so it can be established with great certainty whether a patient has been admitted previously, irrespective of changes in name or address. Data of death can be established with equal certainty, as the same identification number is used in all public registration systems. The ICD–10 has been used in Denmark since 1 January 1994. Information on treatment intervention is not available.

Study sample

The study sample was defined as consisting of all patients admitted during the day or overnight to a psychiatric hospital who had a diagnosis of a single depressive episode (ICD–10, code F32.0–32.3) in a period from 1 January 1994 to 31 December 1999 at the time of their first discharge. The sample was divided into three groups according to whether the depressive episode was mild (codes F32.0, 32.00, 32.01), moderate (codes F32.1, 32.10, 32.11) or severe (codes F32.2, 32.3, 32.30, 32.31). It is well known that some patients are temporarily discharged to other wards for somatic diagnosis or treatment and are subsequently readmitted to the psychiatric ward for further treatment of depression. Since the aim of the investigation was to study relapse, the two admissions were counted as one episode if readmission occurred within 3 days of discharge. Patients were therefore not at risk of relapse until 3 days after discharge: relapse was thus defined as readmission after being discharged for 3 days. Time to relapse was estimated, censoring if death had occurred or if relapse had not occurred before 31 December 1999.

In the estimations of time to suicide, patients might have been readmitted several times before suicide or before the end of the observation period. Consequently, patients might have a different diagnosis at subsequent discharges. According to the diagnostic hierarchy in ICD–10, patients who were given a main diagnosis of organic disorder (code F00–09), schizophrenia and related disorders (F20–29) or bipolar disorder (F31) at later discharges were included in the analysis until this diagnostic alteration and thereafter censored from further analysis, since from this point these patients were no longer considered as suffering from a primary depressive disorder. The follow-up period varied between 1 day and 6 years.

Statistical analysis

The Kaplan–Meier method for estimation with censored observations was used for calculating the probability of remaining discharged and the probability of not dying by suicide, and the log rank test was used to

Table I Distribution of gender and age at first discharge and diagnosis at second discharge for patients first discharged with a diagnosis of a single depressive episode

	Severity of depression		
	Mild	Moderate	Severe
First discharge			
Patients (*n*)	1103	3182	2914
Female (%)[1]	61.6	65.1	62.8
Age (years)			
Median	51.7	52.1	55.8
Quartiles[2]	36.4–70.9	37.5–69.6	39.9–72.6
Second discharge			
Patients (*n* (%))	305 (27.7)	946 (29.7)	1071 (36.8)
Diagnosis (%)			
Organic disorders (F00–09)	4.9	4.9	5.1
Alcohol or drug abuse (F10–19)	7.9	4.9	1.8
Schizophrenia, etc. (F20–29)	2.6	1.9	6.1
Bipolar disorder (F31.0–31.9)	0.7	2.3	4.2
Recurrent depression (F33.0–33.9)	56.4	68.7	72.8
Chronic affective disorder (F34.0–34.9)	2.0	0.8	0.6
Nervous and stress-related disorders (F40–49)	17.0	8.5	4.6
Personality disorders (F60–69)	6.6	5.3	3.1
Others	2.0	0.3	0.7

1. Chi-squared test: $P > 0.05$.
2. Kruskal–Wallis test: $P < 0.0017$.

Table 2 Time to relapse for patients with an ICD–10 diagnosis of mild, moderate or severe depressive episode at first discharge

	Patients *n*	Events censored %	Time to relapse (years)[1]		
			Median	95% CI	Percentiles (25%–75%)
Mild depression	987	68.2	6.1	5.0–7.2	6.1–1.3
Moderate depression	2661	63.1	5.5	5.0–5.9	6.4–0.8
Severe depression	2368	53.2	3.2	2.7–3.7	6.2–0.4

Table 3 Time to suicide for patients with an ICD–10 diagnosis of mild, moderate or severe depressive episode at first discharge

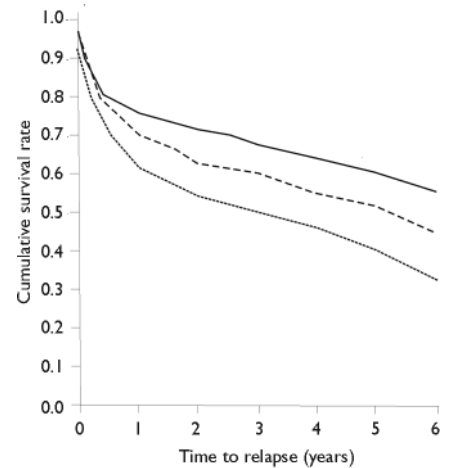|	Patients *n*	Events *n* (%)	Events censored %
Mild depression	1102	6 (0.5)	99.46
Moderate depression	2661	27 (1.0)	99.15
Severe depression	2368	48 (2.0)	98.35

Fig. I Risk of relapse for patients with a diagnosis of mild (—), moderate (- - -) or severe (· · · ·) depressive episode at first discharge: Kaplan–Meier survival curves.
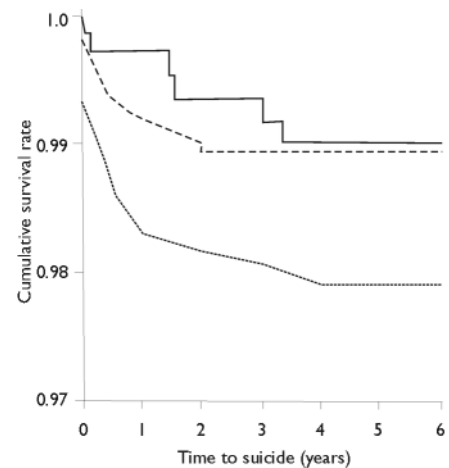

Fig. 2 Risk of suicide for patients with a diagnosis of mild (—), moderate (- - -) or severe (· · · ·) depressive episode at first discharge: Kaplan–Meier survival curves.

estimate the differences between mild, moderate and severe depression (Kaplan & Meier, 1958). Cox's regression models were used to adjust for differences in age and gender at first discharge. The Statistical Package for the Social Sciences was used (SPSS, 2001).

RESULTS

In total 7199 patients were given a diagnosis of a single depressive episode during the period 1 January 1994 to 31 December 1999 at their first discharge. Among these, 1103 patients (15.3%) had a diagnosis of mild depressive episode, 3182 patients (44.2%) had a diagnosis of

moderate depressive episode and 2914 patients (40.5%) had a diagnosis of severe depressive episode (Table 1). There was no significant difference in gender between the three groups, but the age of the patients was significantly greater among those with more severe depression at first discharge. During the 6 years of follow-up, a proportion of the patients were readmitted to a psychiatric ward: 27.7% of those with a diagnosis of mild depression at first discharge, 29.7% of those with moderate depression and 36.8% of those with severe depression. Changes in the main diagnosis from the first to the second discharge are listed in Table 1. Of patients with a diagnosis of mild depression at first discharge, 59.1% were diagnosed as having an affective disorder at second discharge, compared with 71.8% and 77.6% for patients with diagnoses of moderate and severe depression at first discharge, respectively. The proportion of patients with recurrent depression increased with greater severity of depression at first discharge, as did the proportion of patients with bipolar disorder or schizophrenia. Conversely, the proportion of patients with a diagnosis lower in the diagnostic hierarchy – chronic affective disorder (cyclothymia, dysthymia), nervous and stress-related disorders, and personality disorders – decreased as the severity of the depression at first discharge increased.

The risk of relapse in the three patient groups increased with increasing severity of depression at first discharge (Fig. 1). Table 2 compares the median times to relapse for the three groups, and a log rank test showed that the risk of relapse for the groups differed significantly (χ^2=84.2, d.f.=2, $P < 0.0001$). Adjusting for differences in age and gender between the three groups in a Cox's regression model revealed that patients with a moderate depressive episode at first discharge had a 1.2 (95% CI 1.1–1.4) times greater risk of relapse compared with patients with a mild depressive episode at first discharge; similarly, patients with a severe depressive episode had a 1.7 (95% CI 1.5–1.9) times greater risk of relapse compared with patients with a mild depressive episode. Women had 1.14 (95% CI 1.05–1.25) times increased risk of relapse compared with men, and older patients at first discharge had less risk of relapse: 0.993 per year of age (95% CI 0.991–0.995).

The risk of suicide during the 6 years of follow-up increased with the severity of depression at first discharge (Fig. 2), and a log rank test showed that the differences were significant (Table 3; χ^2 = 13.7, d.f.=2, P=0.001). Cox's regression analyses with adjustment for differences in age and gender revealed that the risk of suicide was 1.5 (95% CI 0.6–3.6) times greater in patients with a moderate rather than a mild depressive episode at first discharge and 2.1 (95% CI 0.9–5.1) times greater in patients with a severe rather than a mild depressive episode at first discharge. Both confidence intervals included 0, but maximum likelihood analyses revealed a significant difference between a model with severity included and a model without (χ^2=512, d.f.=2, $P < 0.0001$). Men had 2.2 (95% CI 1.4–3.7) times the risk of suicide compared with women; however, no significant effect was found for age: 1.008 (95% CI 0.994–1.022).

DISCUSSION

In our study diagnostic stability and the risks of relapse and suicide were significantly different in the three groups of patients. It seems that the ICD–10 categorisation into mild, moderate and severe depression predicts long-term course and outcome and thus is clinically useful. On the basis of these findings it seems reasonable to agree with Paykel (2002) that the ICD–10 way of classifying severity should be preserved in future versions. Furthermore, our finding also supports Paykel's view that mild depression is by no means a minor condition, as approximately half of the patients with this diagnosis relapsed (survival time) and 0.5% killed themselves during the observation period of 1 day to 6 years. Thus, it seems likely that a proportion of patients with a diagnosis of mild depression according to ICD–10 might qualify for a diagnosis of major depression according to the DSM–IV (American Psychiatric Association, 1994). Interestingly, patients diagnosed as having a severe depressive episode had greater chances of having this diagnosis subsequently changed to bipolar disorder or schizophrenia, whereas patients with a moderate or mild depressive episode (especially the latter) were more likely to have this diagnosis changed to nervous or stress-related disorder, personality disorder, or alcohol or drug misuse (see Table 1).

The validity of our results is strengthened by our findings of the usual predictors

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of relapse and suicide. Thus, women had greater risk of relapse, in accordance with most studies (Angst, 1981; Winokur *et al*, 1993; Kessing, 1998), and men had a greater risk of suicide, as is well known from prior studies (Cantor, 2000). It should be emphasised that the study concerns only patients with depressive episodes severe enough to lead to hospitalisation, and it is possible that the findings cannot be generalised, for example to primary care patients. Further, the study had a naturalistic approach: patients might have received treatment following discharge and the treatment would have been at the discretion of the responsible clinician, not directed by the researcher. The Danish Psychiatric Central Register contains no data on treatment.

The advantages of our study are that it comprised an observation period of 6 years for the whole Danish population, which is ethnically and socially homogeneous and has a low migration rate. Psychiatric care is well developed, so that people with depression can easily come into contact with a psychiatric hospital. Because all psychiatric in-patient treatment in Denmark is free of charge and there are no private psychiatric in-patient facilities, the study is not biased by socio-economic differences.

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