Mortality and causes of death in a total national sample of patients with affective disorders admitted for the first time between 1973 and 1993

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Background The high mortality from suicide in patients admitted to hospital with an affective disorder is well documented, although specific causes of mortality and changes in mortality are less well studied.

Aims To describe the pattern of mortality in patients with affective disorder and to study changes in suicide risk during the study period.

Method All patients (n=54 103) admitted for the first time to a psychiatric hospital in Denmark during the period 1973–1993 because of affective disorder were included in this study. The mortality rate was compared with that of the general population.

Results Mortality from natural and unnatural causes was elevated in all subgroups of affective disorder. The risk of suicide among patients ill for one year or less after first admission increased during the period 1973–1993.

Conclusions More attention should be paid to the risk of suicide and to physical illness in patients with affective disorders.

Declaration of interest No conflict of interest. Financial support detailed in Acknowledgements.

Patients with an affective disorder have significantly higher mortality rates than the age- and gender-matched general population (see reviews by Goodwin & Jamison (1990), Harris & Barraclough (1998) and Angst *et al* (1999)).

Generally, studies have been based on populations too small to give precise estimates of mortality from specific natural causes, especially when comparing different subgroups of affective disorder. The Danish Psychiatric Register enabled us to study, during 21 years of follow-up, the mortality in a total national sample of patients admitted for the first time to a psychiatric hospital.

Our study aims to describe the general pattern of mortality and specific causes of death in relation to diagnostic subgroups of affective disorder, age, gender, and duration of affective illness since first admission, and to evaluate whether any changes in mortality, especially changes in suicide risk, occurred during the study period.

METHOD

Data source

The study is based on the nationwide Danish Psychiatric Case Register, which has been computerised since 1969, and which includes all Danish psychiatric in-patient facilities. The catchment area for the register is the entire nation of Denmark, which has 5 000 000 inhabitants. Medical treatment in Denmark is free of charge and there are no private in-patient psychiatric facilities. The register has been described further by Munk-Jørgensen & Mortensen (1997). All inhabitants of Denmark have a unique personal identification number used across all public registration systems.

Diagnostic procedures in Denmark were unchanged during the study period – ICD–8 was used from 1967 until 1 January 1994, when ICD–10 was introduced (World Health Organization, 1967, 1992).

In two studies by Kessing (1998*a*,*b*) the diagnoses of manic–depressive illness (ICD–8 code number 296.xx) in the register have been validated and compared with ICD–10 diagnoses of affective disorder (code F30–9) using research criteria (information was obtained by case record review and interview of a subset of the population in the register). Kessing reported that 95 of 100 patients who were given ICD–8 diagnoses of manic–depressive disorder at first admission also received a lifetime ICD–10 diagnosis of affective disorder using OPCRIT (McGuffin *et al*, 1991).

Patients

The study population consisted of 54 103 persons: 19 638 males and 34 465 females (corresponding to 504 398 person-years of observation) aged 15 years or older who were admitted for the first time to a psychiatric hospital or department between 1 January 1973 and 31 December 1993, and who at the first or a later admission were diagnosed with an affective disorder. Psychiatric diagnoses and causes of death were classified according to ICD–8. The patients were divided into the following four subgroups of affective disorder. First, a bipolar group including the following diagnoses: manic–depressive psychosis, manic type; manic–depressive psychosis, circular type; and reactive psychosis, excitative type (ICD–8 code numbers 296.19, 296.39 and 298.19). Second, a unipolar group including the following diagnoses: involutional melancholia; manic–depressive psychosis, depressed type; manic–depressive psychosis, other; and manic–depressive psychosis, unspecified (ICD–8 code numbers 296.09, 196.29, 196.89 and 296.99). Third, those diagnosed with reactive depressive psychosis (ICD–8 code number 198.09). Lastly, a group of those with non-psychotic disorders, neurotic depression, and affective personality disorder, (ICD–8 code numbers 300.49 and 300.19).

When determining the number of person-years at risk, the subgroups of affective illness were arranged in order (the order in which the groups are mentioned above, with the most severe first) according to the diagnostic hierarchy in ICD–8 and ICD–10; hence, the first group, bipolar disorder, has the highest ranking. For example, a patient who was discharged with a diagnosis of unipolar depression and at a later admission was diagnosed with a bipolar disorder was classified as unipolar

https://doi.org/10.1192/bjp.176.1.76 Published online by Cambridge University Press

until the date of the later admission, from which time he or she was classified as bipolar. Patients' diagnoses were not allowed to change to one lower in the hierarchy. Thus, the type of disorder was time-dependent, and some of the patients changed diagnosis during the study period. In this way survival bias is minimised (Weeke & Vaeth, 1986). If at a later date the diagnosis was changed to schizophrenia (ICD–8 code number 295), the patients concerned were removed from the study at that time.

Mortality and causes of death were ascertained by using two different procedures. First, information about whether the patient was alive on the closing date of the study was provided by linkage to the Danish Central Persons Registry (Malig, 1996) using the patient's unique personal identifier mentioned above. In this manner the dates of death for all relevant patients were obtained. Second, the cause of death was established through linkage with the National Register of Causes of Death. The specific cause of death was not established for 56 patients (0.4% of the deaths). In the analyses these patients were included in the category 'all other diseases'.

Statistical analysis

Mortality was calculated by using the person-year method. When calculating the expected number of deaths in the study population, the age (in five-year age groups), gender and cause-specific rates for each year in the Danish population were used as a reference (Sundhedsstyrelsen, 1993).

Standardised mortality ratios (SMRs) were calculated with 95% confidence limits, using the formula variance (log SMR)= 1/(observed number of deaths) and the approximation of log SMR to a normal distribution. When the observed number of deaths was less than 40, exact confidence limits were calculated. Explicit testing of the hypothesis that the SMR was equal to one was performed either by the approximative score test (Clayton & Hills, 1993) or by calculation of the exact value of P directly from the Poisson distribution if the number of observed deaths was below 40 (Breslow & Day, 1987).

Standardised mortality ratios of females and males were compared by the method described by Breslow & Day (1987). Conditional on the total number of observed deaths from both genders, the distribution of female and male deaths is binomial. The test of equality of SMRs then reduces into a hypothesis of observed deaths being divided between the genders in the same proportion as the expected deaths.

Mortality in the four diagnostic subgroups of affective disorder was compared, using the unipolar depression group as a reference. The relative risks were adjusted for age (in five-year age groups), gender, calendar time and duration since first admission for present affective disorder, and calculated using Poisson regression (Breslow & Day, 1987). We used the statistical software package EPICURE (Preston *et al*, 1996).

In order to study changes in mortality during the period 1973–1993 the mortality rates for suicide and death from natural causes were calculated separately for each year, using the age and gender distribution in the Danish population in 1983 as a reference, and for durations of illness of 0–1 year, 1–3 years, 3–5 years, and >5 years since first admission for affective disorder for each gender. We used linear regression of log SMR on calendar year to test the hypothesis that there was no increase in rates of suicide and death from natural causes. When testing whether the increases in mortality from suicide and death from natural causes were equal for men and women, the direct standardised mortality rates were calculated, using the age distribution for men in the Danish population in 1983 as the reference.

RESULTS

Mortality from all causes

During the study period 29% of the patients died – 6363 men and 9254 women. Both men and women in all subgroups of affective disorder had an overall higher mortality than the general population. In men the SMR was 2.18 (χ^2=4053.78, d.f.=1, $P<10^{-6}$); in women it was 1.81 (χ^2=3365.11, d.f.=1, $P<10^{-6}$). The gender difference was statistically significant (χ^2=128, d.f.=1, $P<10^{-6}$).

Suicide and other unnatural causes of death

Suicide was the cause of 3127 (20%) of the deaths (Table 1); there was no statistically significant gender difference (χ^2=0.22, d.f.=1, P=0.64).

For unipolar major depression the SMR for suicide was 19.33 (95% CI 18.37–20.06, χ^2=25 735.5, d.f.=1, $P<10^{-6}$), while for psychotic reactive depression it was 18.67 (95% CI 17.47–19.95, χ^2=14 562.7, d.f.=1, $P<10^{-6}$), and for neurotic depression it was 10.51 (95% CI 9.54–11.57, χ^2=3553.2, d.f.=1, $P<10^{-6}$); there was no statistically significant gender difference. In bipolar disorder the SMR for suicide was 18.09 (95% CI 16.32–20.07, χ^2=5845.7, d.f.=1, $P<10^{-6}$) – 16.17 (95% CI 13.93–18.75) for men and 20.31 (95% CI 17.61–23.42) for women. The gender difference in suicide risk was statistically significant (χ^2=4.95, d.f.=1, P=0.026). When we compared the suicide risk in the four subgroups (bipolar disorder, psychotic reactive depression, neurotic depression and unipolar depression), we found the highest risk of suicide in the unipolar group, but the most marked difference was between the neurotic group and the three other groups (Table 2).

The risk of suicide was highest during the first year after first admission for all diagnostic subgroups regardless of age and gender. The risk of suicide decreased with increasing duration of illness until five years after first admission for an affective disorder, after which there was no further change in suicide risk (Table 3).

Risk of suicide increased over the study period in patients with a duration of affective disorder of up to one year after first admission. The SMR increased from 55 to 93 (slope 0.033, t=7.65, d.f.=19, $P<10^{-6}$) (Fig. 1). When we used the comparative mortality figure instead of the SMR, the results were unchanged. Calculating the changes by using the direct standardised mortality rate of patients with an affective disorder resulted in an increase of 2.5% per year (slope 0.025, t=3.36, d.f.=19, P=0.0033). This means that the increase in SMRs could not be ascribed only to changes in suicide rates in the general population. We did not find any statistically significant gender difference (P=0.16).

Next we tested the hypothesis that all four diagnostic subgroups had the same increase in suicide risk during the period 1973–1993. The hypothesis could not be dismissed (P=0.2).

Patients in all diagnostic subgroups had a higher risk of death from other unnatural causes (e.g. accident, suicide, homicide or undetermined death) (Table 1). The risk was highest during the first year after first admission.

Natural causes

For men, the SMR for all natural causes combined was 1.67 (χ^2=1215.19, d.f.=1,

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Table 1 Cause-specific standardised mortality ratios (SMRs) for affective disorder

Cause of death		Males				Females				Both genders			
	ICD–8 code no.	Observed deaths (*n*)	Expected deaths (*n*)	SMR	95% CI	Observed deaths (*n*)	Expected deaths (*n*)	SMR	95% CI	Observed deaths (*n*)	Expected deaths (*n*)	SMR	95% CI
Suicide	E950–959	1470	85.05	17.28*	16.42–18.19	1657	97.56	16.99*	16.19–17.82	3127	182.61	17.12*	16.53–17.73
Accidents	E800–949	239	93.02	2.57*	2.26–2.92	385	157.54	2.44*	2.21–2.70	624	250.57	2.49*	2.30–2.69
Homicide	E960–969	9	1.95	4.61*	2.11–8.76	13	3.51	3.70*	1.97–6.34	22	5.46	4.03*	2.53–6.10
Undetermined whether suicide, accident or homicide E980–989	92	9.73	9.46*	7.71–1-1.60		130	13.32	9.76*	8.22–11.59	222	23.05	9.63*	8.44–10.98
Malignant neoplasms	140–209	932	794.96	1.17*	1.10–1.25	1670	1457.01	1.15*	1.09–1.20	2602	2251.97	1.16*	1.11–1.20
Cerebrovascular disease	430–438	355	210.94	1.68*	1.52–1.87	742	526.56	1.41*	1.31–1.51	1097	737.49	1.49*	1.40–1.58
Cardiovascular disease	390–429 440–458	1813	1099.25	1.65*	1.58–1.73	2448	1728.29	1.42*	1.36–1.47	4261	2827.54	1.51*	1.46–1.55
Respiratory disease	460–519	437	216.60	2.02*	1.84–2.22	677	349.04	1.94*	1.80–2.09	1114	565.64	1.97*	1.86–2.09
Digestive disease	520–577	233	103.62	2.25*	1.98–2.56	311	174.02	1.79*	1.60–2.00	544	277.64	1.96*	1.80–2.13
Genito-urinary disease	580–629	42	30.09	1.40**	1.03–1.89	98	62.40	1.57*	1.29–1.91	140	92.49	1.51*	1.28–1.79
Endocrine disease	240–258	85	50.60	1.68*	1.36–2.08	138	101.45	1.36*	1.15–1.61	223	152.04	1.47*	1.29–1.67
Neurological disease	320–389	64	29.62	2.16*	1.69–2.76	110	55.22	1.99*	1.65–2.40	174	84.84	2.05*	1.77–2.38
Infection	000–136	41	15.99	2.56*	1.89–3.48	32	21.71	1.47**	1.01–2.08	73	37.70	1.94*	1.54–2.44
Ill-defined conditions	780–796	310	126.14	2.46*	2.20–2.75	547	238.29	2.30*	2.11–2.50	857	364.43	2.35*	2.20–2.51
All other		241	54.01	4.46*	3.93–5.06	296	122.12	2.42*	2.16–2.72	537	176.13	3.05*	2.80–3.32
All unnatural causes	E800–989	1810	189.76	9.54*	9.11–9.99	2185	271.93	8.04*	7.71–8.38	3995	461.68	8.65*	8.39–8.93
All natural causes		4553	2731.82	1.67*	1.62–1.72	7069	4836.10	1.46*	1.43–1.50	11 622	7567.92	1.54*	1.51–1.56
Total		6363	2921.57	2.18*	2.13–2.23	9254	5108.03	1.81*	1.78–1.85	15 617	8029.60	1.94*	1.91–1.98

All SMRs significantly different from 1: *$P<10^{-6}$, **$P=0.03$.

Table 2 Cause-specific relative risk for bipolar disorder, psychotic reactive depression and neurotic depression relative to unipolar depression (adjusted for age, gender and duration of illness)

Cause of death		Bipolar disorder		Psychotic reactive depression		Neurotic depression		
	ICD–8 code no.	Relative risk	95% CI	Relative risk	95% CI	Relative risk	95% CI	P[1]
Suicide	E 950–959	0.82	0.73–0.93	0.97	0.90–1.06	0.60	0.54–0.67	$<10^{-6}$
Accidents	E 800–949	0.91	0.68–1.22	1.26	1.04–1.53	1.26	1.01–1.58	0.024
Homicide	E 960–969	2.28	0.50–10.45	3.27	0.99–10.78	2.52	0.69–9.19	0.221
Undetermined whether suicide, accident or homicide	E 980–989	1.23	0.81–1.87	1.06	0.75–1.51	1.32	0.93–1.87	0.411
Malignant neoplasms	140–209	1.08	0.93–1.24	1.50	1.37–1.65	1.27	1.14–1.42	$<10^{-6}$
Cerebrovascular disease	430–438	1.22	0.99–1.51	1.22	1.06–1.42	1.08	0.90–1.30	0.034
Cardiovascular disease	390–429 440–458	1.14	1.02–1.26	1.23	1.14–1.32	1.04	0.94–1.14	$<10^{-6}$
Respiratory disease	460–519	1.34	1.10–1.64	1.27	1.10–1.47	1.16	0.97–1.39	0.002
Digestive disease	520–577	1.09	0.80–1.51	1.62	1.32–1.99	1.53	1.21–1.94	$<10^{-6}$
Genito-urinary disease	580–629	1.03	0.53–2.01	1.58	1.06–2.36	1.61	1.00–2.59	0.073
Endocrine disease	240–258	1.35	0.87–2.09	1.31	0.94–1.81	1.16	0.78–1.71	0.335
Neurological disease	320–389	1.00	0.59–1.69	1.38	0.98–1.94	0.52	0.30–0.91	0.005
Infection	000–136	1.20	0.61–2.39	1.00	0.57–1.75	0.46	0.19–1.10	0.194
Ill-defined conditions	780–796	1.16	0.92–1.46	1.15	0.97–1.36	1.31	1.09–1.59	0.035
All other		1.06	0.79–1.42	1.13	0.92–1.40	0.97	0.75–1.25	0.613
All unnatural causes	E 800–989	0.86	0.77–0.96	1.02	0.94–1.10	0.72	0.66–0.79	$<10^{-6}$
All natural causes		1.15	1.08–1.23	1.30	1.24–1.36	1.14	1.08–1.20	$<10^{-6}$
Total		1.07	1.01–1.13	1.22	1.18–1.27	1.01	0.96–1.06	$<10^{-6}$

1. Testing differences across diagnostic groups.

Table 3 Relationship between duration of affective disorder since first admission to hospital and standardised mortality ratios (SMRs) for suicide and death from natural causes

Diagnostic subgroup	Duration of affective disorder							
	0–1 year		1–3 years		3–5 years		> 5 years	
	SMR	95% CI	SMR	95% CI	SMR	95% CI	SMR	95% CI
Bipolar disorder								
Suicide	53.84	45.02–64.39	20.23	16.25–25.18	14.85	11.29–19.54	10.68	8.87–12.87
Natural causes	2.36	2.01–2.77	1.61	1.40–1.86	1.75	1.51–2.02	1.51	1.39–1.64
Unipolar depression								
Suicide	73.17	67.64–79.16	21.83	19.58–24.35	12.94	11.11–15.09	9.17	8.28–10.15
Natural causes	1.70	1.58–1.84	1.32	1.24–1.40	1.35	1.26–1.44	1.32	1.28–1.37
Psychotic reactive depression								
Suicide	92.29	84.07–101.31	21.61	18.67–25.01	12.86	10.51–15.74	5.91	5.05–6.92
Natural causes	3.32	3.04–3.62	1.92	1.76–2.10	1.90	1.73–2.08	1.60	1.53–1.69
Neurotic depression								
Suicide	45.86	39.16–53.70	14.61	11.88–17.96	8.32	6.27–11.04	5.04	4.22–6.02
Natural causes	2.09	1.77–2.47	1.64	1.43–1.88	1.54	1.33–1.77	1.64	1.55–1.74

$P<10^{-6}$); for women it was 1.46 (χ^2=1030.96, d.f.=1, $P<10^{-6}$) (Table 1). The gender difference was statistically significant (χ^2=47.61, d.f.=1, $P<10^{-6}$). For all specific categories of natural causes of death the mortality was statistically significantly elevated, with SMRs of 1.15–4.26 (Table 1). The SMR was statistically significantly higher in men than women for cerebrovascular diseases (P=0.006), cardiovascular diseases ($P<10^{-6}$), diseases of the digestive system (P=0.009), infectious diseases (P=0.02), and the group 'all other diseases' ($P<10^{-6}$). For the remaining categories in Table 1 we found no

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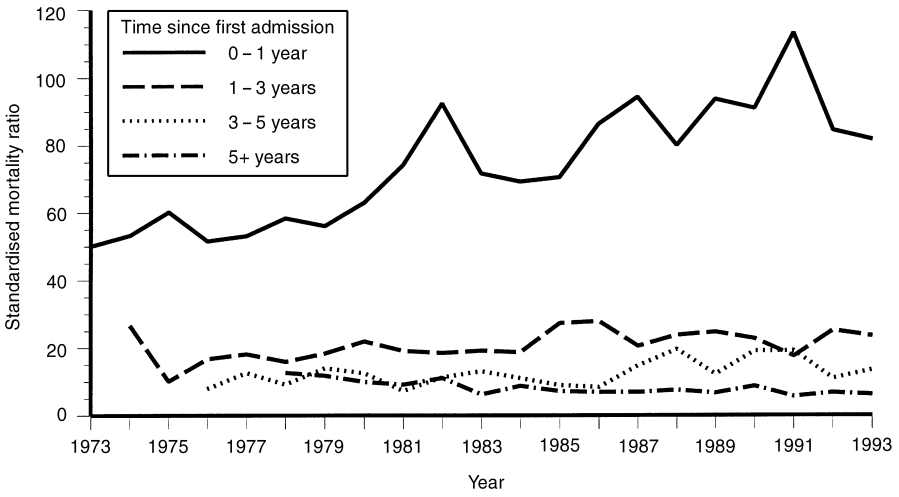

Fig. 1. Suicide risk in patients with affective disorder by time since first admission to hospital (men and women).

statistically significant gender differences in SMRs. Mortality from natural causes was highest during the first year after first admission for affective disorder (Table 3).

When we compared the relative mortality risk of bipolar illness, reactive psychotic depression and neurotic depression with that of unipolar depression (Table 2), we found the psychotic reactive depression group to have somewhat higher mortality from natural causes than the other three groups. We found only minor differences between the subgroups in cause-specific mortality from natural causes. The psychotic reactive group had a higher risk of death from malignant neoplasms and from cardiovascular, digestive and neurological diseases, while the bipolar group had a higher risk of death from respiratory diseases and from ill-defined conditions. The differences were small but statistically significant, and could not be ascribed to the differences in duration of illness, as we adjusted for this variable in the analysis.

When we evaluated changes in mortality from natural causes during the study period, we found no trend (either increasing or decreasing) in the excess risk relative to the general population.

DISCUSSION

Methodology

One limitation of a register-based study is the lack of operationalised diagnostic research criteria. Diagnoses are determined by a psychiatrist at the discharge of the patient, and the diagnostic groups reflect the realities of clinical assessment and diagnosis. As stated previously, studies by Kessing (1998*a*,*b*) showed a high concordance between clinical ICD–8 diagnoses and ICD–10 diagnoses based on research criteria, and showed that patients diagnosed as manic–depressive according to ICD–8 seemed to correspond to the most severe of the affective disorder patients according to ICD–10, given that affective disorder diagnosed according to ICD–10 includes a broader range of severity of affective illness. In the psychotic reactive and neurotic groups the diagnoses are less well defined; nevertheless, the present study shows that psychiatric diseases traditionally considered less serious than bipolar disorder and major unipolar depression have a substantially elevated risk of suicide, other unnatural death and natural death.

Another limitation of our study was that we were not able to determine whether patients had a physical disorder at the time of first admission for an affective disorder, or how many patients used drugs or alcohol.

Mortality from all causes

Our finding of higher than expected mortality from suicide, accidents and other unnatural causes of death is in agreement with several other studies reviewed by Guze & Robins (1970), Goodwin & Jamison (1990) and Harris & Barraclough (1997).

We found only minor differences in the excess risk of suicide between the unipolar, bipolar and psychotic reactive groups (SMRs 18–19 times the expected number) and a somewhat lower risk in the neurotic depression group (SMR 11), in agreement with results from the meta-analyses conducted by Harris & Barraclough (1997). When comparing mortality in the bipolar disorder and unipolar disorder groups, we found that the risk of suicide was lower and mortality from natural causes was higher in the bipolar disorder group, thus replicating the findings of Weeke & Vaeth (1986).

Mortality and time since first admission

An important finding was that mortality from all natural and unnatural causes was especially high in the year following first admission for affective disorder, regardless of age, gender and subtype of affective illness. Several other studies have reported higher rates of mortality shortly after discharge in psychiatric patients in general, and in specific psychiatric disorders (Fawcett *et al*, 1987; Goldacre *et al*, 1993; Rossau & Mortensen, 1997; Appleby *et al*, 1998).

Changes in mortality during the study period

One of our main findings was that the risk of suicide increased during the study period among patients whose affective disorder lasted up to one year after the first admission. The increase in suicide risk was not only the result of the reduction in the number of suicides in the general population, as the increasing risk of suicide was evident both relative to the background population and in terms of absolute rates. This increasing risk coincided with the 50% reduction in the number of available in-patient beds that has taken place in Denmark over the past four decades. In their meta-analyses of suicide in people with a mental disorder, Harris & Barraclough (1998) reported that the risk of suicide in psychiatric patients treated after 1970 doubled relative to those treated before 1970, and discussed whether changes in care arrangements were a possible cause. One consequence of the reduced number of in-patients beds is increasing competition for the remaining beds. The result could be that more patients would be suicidal when admitted, especially as the main reason for in-patient care in non-major depression is suicide risk, which is not the only major indication for those with major depressive disorder or bipolar disorder. This could inflate the mortality due to suicide. During the study period the number of admissions for neurotic depression and psychotic reactive depression

https://doi.org/10.1192/bjp.176.1.76 Published online by Cambridge University Press

decreased greatly, whereas the numbers of admissions with unipolar and especially bipolar disorder were much less reduced. We did not find any statistically significant differences in the increasing suicide risk between the diagnostic subgroups. Consequently we find it unlikely that the above-mentioned selection mechanism could be the only explanation for the increase in suicide risk.

Rossau & Mortensen (1997) and Goldacre *et al* (1993) found that the risk of suicide in a psychiatric population is especially high during the first few weeks after discharge. In their study of risk factors for suicide in patients with schizophrenia, Rossau & Mortensen (1997) found that the changes towards shorter and more frequent admissions can in part explain the increase in suicide during the period 1971–1987. Another consequence of the increased competition for in-patient treatment could be that more patients admitted during the later years of the study were more severely ill (with, for example, comorbid psychiatric and/or physical disorders) than during the earlier years. This would also lead to increasing risk of suicide (Isometsa *et al*, 1994).

Hansen (1997) reported an increasing number of patients with comorbid drug use in Danish psychiatric hospitals during the period 1970–1993. However, further studies are needed to determine whether the selection biases mentioned above could explain the increases in suicide risk between 1973 and 1993.

Natural causes

In our study we found statistically elevated mortality from all natural causes of death in patients within affective illness. The reason for such an increase not being found in earlier studies could be that a large number of patients is required in order to detect an elevated mortality from specific causes when adjusting for age, gender and subgroup of affective disorder.

One reason for the elevated mortality from natural causes could be that too little attention is given to the physical health of patients with psychiatric diseases, and that physical symptoms are ascribed to the psychiatric illness or to psychological distress by the patients as well as the doctors (Hall *et al*, 1978; Koranyi, 1979). Murphy *et al* (1988), in their study comparing elderly patients with depression with age- and gender-matched controls, concluded that the former's higher mortality from natural causes was not due to differences in physical health alone. They suggested that there could be an occult disease present that is especially associated with depression, or that depression itself could predispose to subsequent mortality from natural causes.

Poor self-care (e.g. poor nutrition, inactive lifestyle) during episodes could indirectly compromise general health and contribute to the elevated mortality rates. Smoking and the misuse of alcohol are associated with increased mortality, and several studies report elevated alcohol misuse in patients with bipolar or unipolar disorder relative to the general population (Goodwin & Jamison, 1990). Greater frequency of heavy smoking has been reported in psychiatric patients relative to the general population (Hughes *et al*, 1986; Tanskanen *et al*, 1997).

Selection could be a contributory cause of higher mortality, as patients who are both psychiatrically and physically ill may be admitted to hospital more readily. Black *et al* (1987) concluded that excessive numbers of natural deaths in patients with psychiatric disorders are due to complicating physical disorders.

A general elevation in mortality from a broad range of physical disorders in all subgroups of affective illness, together with the high and increasing risk of suicide, underlines the fact that affective disorders are potentially fatal diseases. Our study suggests that there may be a need for general improvement in the diagnosis and treatment of physical illness in all patients admitted to hospital for affective disorders, and for continuing research into the risk factors for suicide.

CLINICAL IMPLICATIONS

- The risk of suicide increased during the period 1973–1993 among patients ill less than one year after the first admission.
- The highest risk of death from suicide, accidents, homicide and natural causes occurs during the first year after first admission for affective disorder.
- More attention should be given to the physical health of patients with affective disorder.

LIMITATIONS

- Operationalised research diagnostic criteria were not used.
- We were not able to determine comorbidity or the extent of the use of alcohol and drugs.
- The study population was limited to those having the most severe affective disorders, as it did not include sufferers treated exclusively as out-patients.

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(First received 18 June 1999, final revision 17 September 1999, accepted 21 September 1999)

ACKNOWLEDGEMENTS

We thank the following foundations for their financial support of this study: the Theodore and Vada Stanley Foundation, Sygekassernes helsefond; Pulje til styrkelse af psykiatrisk forskning, Psykiatrisk forskningsfond; Eli og Egon Larsens fond, Psykiatrisk forskningsfond af 1967; Fonden til forskning af sindslidelser, Direktør Jacob Madsen og Hustrus Fond; Fonden til Psykiatriens fremme, Overlæge dr.med

https://doi.org/10.1192/bjp.176.1.76 Published online by Cambridge University Press

Einer Geert-Jørgensen og hustrus fond; Poul M. Færgemans Legat.

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