Suicide and other causes of mortality after post-partum psychiatric admission

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Background The risk of suicide in postnatal women is low and those suicides that occur appear to be associated with severe psychiatric illness. No previous study has specifically studied the risk of suicide following post-partum psychiatric disorder.

Method We calculated standardised mortality ratios (SMRs) for suicide, unnatural deaths and deaths from natural causes for women admitted to psychiatric hospital in the first year after childbirth, using computerised cross-linkages between the Danish Psychiatric Case Register and the Danish registers of birth and causes of death for 1973–1993.

Results During the study period 1567 women were admitted to psychiatric hospital of whom 107 (6.8%) died. The SMRs (compared with 100) were 1719 (95% CI 1284–2254) for suicide, 1329 (95% CI 1038–1676) for all unnatural causes and 238 (95% CI 167–329) for natural causes. Suicides and deaths from all unnatural causes were most likely to occur in the first year after childbirth, the SMR for suicide within one year being 7216 (95% CI 3945–12 108).

Conclusions Although postnatal women as a whole appear to have a low rate of suicide, severe post-partum psychiatric disorder is associated with a high rate of deaths from natural and unnatural causes, particularly suicide. The risk is especially high in the first postnatal year, when the suicide risk is increased 70-fold. Close clinical superivision at this time is indicated.

Suicide in the first postnatal year is uncommon, but an association with severe psychiatric disorder is suggested by the use of violent methods, a peak in the first postnatal month and a high rate of associated infanticide (Appleby, 1991, 1996). However, suicide in women with severe post-partum disorders has not been specifically studied. Protheroe's (1969) study of 134 subjects admitted from 1927 onwards describes eight deaths during variable periods of follow-up as well as 14 deaths during the index illness; causes are not stated and only one appears to have been a suicide, occurring a few days after discharge. Platz & Kendell (1988), in a nine-year follow-up study, found only one suicide, the timing of which is not stated. Davidson & Robertson (1985), following up 82 of a sample of 94 cases, found four suicides, one of which had occurred during the index illness, the others between three and 12 years later. Da Silva & Johnstone (1981) examined the histories of 45 women whose illnesses had begun postnatally 1–6 years earlier: two had died, both by suicide, one death occurring during the post-partum episode itself. The aim of the present study was to use case register and population register data to calculate short-term and long-term mortality rates for deaths from all causes and specifically for suicide following post-partum psychiatric admission.

METHOD

We used the Danish Psychiatric Case Register (Munk-Jorgensen & Mortensen, 1997), Medical Birth Register and Register of Causes of Death to identify all women who were admitted to a psychiatric hospital in Denmark within one year of childbirth during the 21-year period 1973–1993 who died from any cause during the same period. Each person in Denmark has a unique identifying number which is recorded in such registers and this was used as the basis of a computerised record linkage. We were also able to identify those cases in which the infant died within a year of birth, and the timing of infant deaths. The case register is a national register containing data from all mental health units in Denmark. It records age, dates of admission and discharge, and diagnosis (all diagnoses during the study period were made according to ICD–8 (World Health Organization, 1967)).

Standardised mortality ratios (SMRs) were calculated for all causes of death, and for suicide, unnatural deaths (suicide, homicide and accident) and deaths from natural causes; the expected numbers for the SMRs were based on age-specific mortality rates for the Danish female population over the study period. Confidence limits were estimated assuming the observed death rates followed an approximate Poisson distribution. Time to death following childbirth (measured from the date of birth of the child) was evaluated using standard actuarial life-table methods. Factors potentially related to (predictive of) the time to death were examined using Cox proportional hazards regression methods. Factors evaluated included diagnosis, previous psychiatric admission, age of the mother, gender of the child, age of the child at the time of death of the mother and death/stillbirth of the child.

RESULTS

Total sample

During the study 1567 women were admitted to psychiatric hospital, of whom 107 (6.8%) died. In two cases, the date of hospital discharge and the date of death were the same, indicating death as an in-patient – the cause of both deaths was suicide. Nineteen women (18% of deaths, 1.2% of sample) died within one year of childbirth.

Number of deaths

There were 52 suicides (49% of deaths, 3.3% of sample), of whom 14 (27% of suicides, 0.9% of sample) died within one year of childbirth. There were 71 unnatural deaths (66% of deaths, 4.5% of sample), of whom 19 (27% of unnatural deaths, 1.2% of sample) died within one year of childbirth. There were 36 deaths from natural causes (34% of deaths, 2.3% of sample); these were not associated with the first year

after childbirth. The most common natural causes of death were recorded as liver cirrhosis (four cases), alcohol dependency (three cases) and acute myocardial infarction (three cases). There was one death from chronic pancreatitis and one death for which the cause was recorded as drug misuse. In total, therefore, there were nine deaths (25% of all natural deaths) which may have been the result of alcohol or drug misuse.

Standardised mortality ratios

SMRs and their 95% confidence intervals (CIs) are given in Table 1. These show a high risk of unnatural death, particularly suicide, during the follow-up period, especially in the first year after childbirth. The data for the first two years after childbirth show that the particularly high rates of mortality in the first year are not maintained during the second year, although the mortality rate continues to be high. The long-term risk of death from natural causes is also high.

Time to unnatural mortality was associated with previous psychiatric admission (hazard ratio 2.30, 95% CI 1.41–3.74) and subject age (hazard ratio for each one year age increase=1.05 (95% CI 1.01–1.10)).

Infant deaths

Forty-seven (3%) of the post-partum psychiatric admissions were associated with the death of the infant in the first year after birth. Of these, 35 infant deaths occurred before admission, four during in-patient stay and eight following discharge. Most of the deaths (26 cases) that preceded maternal admission occurred more than one week earlier. Three of the suicides occurred in women who had experienced an infant death but none of these suicides occurred in the first year after childbirth.

DISCUSSION

The main finding of this study is that women admitted to hospital with a post-partum psychiatric disorder are at high risk of suicide, the overall long-term risk being increased approximately 17-fold. The rate is especially high in the first year following childbirth when it is increased approximately 70-fold. The long-term risk of death from natural causes is also high. Post-partum psychiatric admission was associated with 3% infant mortality: most infant deaths occurred before admission and are likely to have precipitated the maternal illness.

There are few directly comparable figures for women with mental illness occurring at other times. Most severe post-partum illnesses are affective (Brockington *et al*, 1981; Meltzer & Kumar, 1985; Kendell *et al*, 1987). The long-term risk of suicide in both genders with major affective disorder has been reported as 15% in one review of early studies (Guze & Robins, 1970), 8.5% in a more recent study of in-patients with depression (Berglund & Nilsson, 1987) and 3.6% in a cohort including schizoaffective disorders (Fawcett *et al*, 1990). Gender-specific SMRs for suicide in schizophrenia have been calculated for a cohort followed-up for 10 years, the risk being increased approximately 10-fold in men and 17-fold in women (Allebeck & Wistedt, 1986). Our 70-fold increase in the one-year risk of suicide can be compared with a 45-fold increase in risk among women with affective psychosis within one month of hospital discharge and increases between 37-fold and 124-fold in those aged between 15 and 44 years (Geddes & Juszczak, 1995). Similarly, age- and follow-up duration-specific SMRs in women admitted with schizophrenia are highest in young women in the first year of follow-up (Mortensen & Juel, 1993).

The large study sample obtained through a national case register and population registers in this study had allowed us to calculate reliable mortality rates but these data sources provide few clinical details and precise causes of death from natural causes can be inaccurate. However, early unnatural mortality was predicted by previous psychiatric admission, presumably indicating a group in whom a relapsing course was becoming evident. Several natural deaths appeared to be related to alcohol or drug misuse but this can only be confirmed by more detailed study.

These results show that, although post-natal women may have a low rate of suicide, those who develop severe post-partum illness are at high risk, particularly during the first year after childbirth. Severe post-partum illness cannot be considered to have a good prognosis, despite initial recovery in most cases. Close supervision, particularly in the first year and in those with a history of previous illnesses, is required.

Table 1 Standardised mortality ratios (SMRs) following post-partum psychiatric admission

	Observed number	Expected number	SMR (95% CI)
Mortality within one year of childbirth			
All causes	19	0.975	1949 (1173–3043)
Unnatural causes	19	0.390	4872 (2933–7608)
Suicide	14	0.194	7216 (3945–12 108)
Mortality within two years of childbirth			
All causes	26	1.960	1329 (868–1947)
Unnatural causes	25	0.770	3247 (2101–4793)
Suicide	19	0.391	4859 (2939–7588)
Total mortality			
All causes	107	20.5	522 (168–2477)
Unnatural causes	71	5.34	1329 (1038–1676)
Suicide	52	3.03	1719 (1284–2254)
Natural causes	36	15.1	238 (167–329)

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CLINICAL IMPLICATIONS

- Women who experience post-partum psychiatric admissions are at high long-term risk of suicide.
- The highest risk of suicide is in the first year after childbirth – close supervision is required during this period.
- Long-term risk of mortality from natural causes is also high and may be linked to the use of alcohol or drugs.

LIMITATIONS

- Relatively little clinical information is available on each individual, limiting the study of predictors of suicide.
- Recorded causes of natural deaths are sometimes vague.
- The data are taken from the Danish population and cannot be assumed to be applicable to populations in other countries.

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