Post-partum psychoses

Clinical diagnoses and relative risk of admission after parturition

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Background Previous studies have suggested that the risk for psychosis, especially affective psychosis, is highly increased during the first 30 days after delivery. The aim of our study was to replicate these findings.

Method Linking The Danish Medical Birth Register and The Danish Psychiatric Central Register from 1 January 1973 to 31 December 1993 revealed 1253 admissions diagnosed as psychosis within 91 days after delivery. The admission rate after delivery was compared with the admission rate among non-puerperal women in the general Danish female population.

Results The relative risk of all admissions was only slightly increased, RR=1.09 (95% CI 1.03–1.16). The admission rate concerning first admissions was highly increased, RR=3.21 (95% CI 2.96–3.49) whereas the admission rate concerning readmissions was reduced, RR=0.66 (95% CI 0.61–0.72).

Conclusions Childbirth is a strong risk factor for first admission with psychosis, but the risk may be less increased than previously assumed.

Post-partum psychosis has been defined as psychosis commencing within three months of delivery (Kendell *et al*, 1987). During this century an incidence of 1 to 2 per 1000 births has been reported (Kendell *et al*, 1987; Kumar, 1994). Previous studies have described post-partum psychoses as mainly affective, functional psychoses with a good prognosis (Dean & Kendell, 1981; Meltzer & Kumar, 1985; Kendell *et al*, 1987; Rehman *et al*, 1990), and with symptomatology changing over time with both affective symptoms, hallucinations and delusions often dominated by confusion (Brockington & Cox-Roper, 1988). Despite this varying symptomatology, relatively few patients with schizophrenia have been found to have arousal of their symptoms provoked by childbirth (Meltzer & Kumar, 1985).

Only one study has quantified the importance of childbirth as a risk factor for the onset of psychosis (Kendell *et al*, 1987). They found that the rate of admission to a psychiatric hospital with a psychotic illness was highly increased during the first 30 days after childbirth compared to the admission rate among the same women before delivery.

The present study will replicate Kendell *et al*'s (1987) study, but instead of using the women as their own control group, it will relate the risk of admission to a psychiatric hospital with a psychotic illness after parturition to the rate of psychiatric admission with a functional psychosis among women in the general population. Also, this study will discriminate between first admissions and readmissions diagnosed as functional psychosis after parturition.

METHOD

The study includes all women giving birth in Denmark in the period between 1 January 1973 and 31 December 1993. This period has been chosen because the Danish Medical Birth Register was initiated in 1973 and the ICD–10 diagnostic classification (World Health Organization, 1992) was introduced in Denmark in 1994, the ICD–8 classification (World Health Organization, 1978) thus being used in the observation period.

Using a unique person identifier (CPR-number) of the mothers, the Danish Medical Birth Register and the Danish Psychiatric Central Register were linked. The CPR-numbers are used uniformly across all population registers in Denmark, and can be logically checked for errors, making errors in the linkage very unlikely. In this way information about the women who both gave birth in this period and were admitted to a psychiatric hospital was obtained.

No private psychiatric hospitals exist in Denmark, and it does not seem sensible to assume that women who become psychotic after delivery could be treated outside a hospital. Therefore we assume that this study includes all women diagnosed with a psychosis after delivery in Denmark in the study period. We do not know whether the admission pattern among women diagnosed with post-partum psychosis has been changed because of the reduction in psychiatric hospital beds in the period from 1970 to 1990 (Munk-Jørgensen & Mortensen, 1991). Out-patients were not registered in the study period.

The number of deliveries registered in Denmark from 1 January 1973 to 31 December 1993 was 1 270 117 (*Vital Statistics* 1986 and 1993). The rate of mental disorders in relation to childbirth was calculated as the number of women with a psychiatric admission or first admission distribution by calendar year and five-year age groups, divided by the number of childbirths in Denmark in the same calendar year to mothers of the same age groups. The relative risk was calculated by dividing the observed number of psychiatric admissions among women giving birth with the expected number of admissions. The expected number was calculated by multiplying the number of births, subdivided as mentioned above, with the age- and calendar year specific rates per week for psychiatric admission in the general Danish female population. Calculations were made separately for each week after birth. Since the proportion of women in the general population who have given birth in any given week is small, the expected number of admissions based on the age-, period- and

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gender-specific general population rates of psychiatric hospitalisation, is a close approximation to the expected number of admissions among women who are not in this specific post-partum period. Thus the relative risk estimates can be interpreted as a direct comparison between women who are in a specific phase of their puerperal period and those who are not.

The confidence limits were exact 95% confidence limits based on the assumption that the observed number of cases were Poisson-distributed (Ipsen & Feigl, 1970).

Observation period

Ninety-one days (three months) after delivery was chosen as the observation period. Some studies have argued that the term post-partum psychosis should be restricted to illnesses with an onset within two weeks of childbirth (Brockington & Cox-Roper, 1988). Others prefer to discriminate between post-partum psychoses with an early or a late onset within a six-month period after delivery (McNeil, 1987). Recent studies indicate that the majority of post-partum psychoses has an onset within a few weeks, or at most, three months post-partum (Kumar, 1994).

On the day of delivery (day 1) all admissions were registered. In order to ensure that patients who were admitted with a psychosis during pregnancy and transferred to a general hospital at the time of delivery were not included as cases of post-partum psychoses, and to ensure that post-partum psychoses were only registered once in relation to every childbirth, the admissions were registered as follows.

From the day after delivery and 90 days onward all admissions were registered every week. If a woman was admitted to a psychiatric hospital with a psychosis between day 2 and day 91 after delivery she was registered once. If a woman was discharged and admitted again in the observation period this second admission would not be registered as a post-partum psychosis. If a woman had more than one child during the study period, 1973–93, only one admission in relation to each childbirth would be included. If a woman was discharged one day before parturition and readmitted after delivery this readmission was not counted as a post-partum psychosis. If a woman was discharged two days or more before delivery and admitted again this new admission was registered as a post-partum psychosis readmission. We assumed that a woman discharged one day before delivery was discharged because of the delivery; if she was discharged two days or more before delivery it might be because she had recovered from mental illness.

Table 1 Temporal relationship between childbirth and relative risk (RR) of admission diagnosed as functional psychosis

	Days 2–28			Days 29–91			Days 2–91		
	n	RR	95% CI	*n*	RR	95% CI	*n*	RR	95% CI
Manic depressive psychoses[1]									
All admissions	150	1.88	1.59–2.21	124	0.70	0.58–0.84	274	1.07	0.95–1.20
First admissions	50	3.56	2.64–4.70	53	1.70	1.28–2.23	103	2.28	1.86–2.77
Readmission	100	1.52	1.24–1.85	71	0.49	0.38–0.62	171	0.81	0.69–0.94
Schizophrenia[2]									
All admissions	57	0.45	0.34–0.58	45	0.16	0.12–0.21	102	0.25	0.20–0.30
First admissions	5	0.95	0.31–2.21	2	0.17	0.02–0.62	7	0.41	0.17–0.85
Readmissions	52	0.43	0.32–0.56	43	0.16	0.11–0.21	95	0.24	0.20–0.30
Reactive psychoses[3]									
All admissions	210	2.56	2.23–2.93	182	1.00	0.86–1.16	392	1.49	1.34–1.64
First admissions	121	4.12	3.42–4.92	109	1.68	1.38–2.02	230	2.44	2.13–2.77
Readmissions	89	1.69	1.36–2.08	73	0.63	0.49–0.79	162	0.96	0.82–1.12
Unspecified psychoses[4]									
All admissions	44	1.34	0.97–1.80	27	0.37	0.24–0.54	71	0.67	0.53–0.85
First admissions	20	3.23	1.97–4.98	13	0.95	0.50–1.62	33	1.66	1.14–2.33
Readmissions	24	0.90	0.58–1.34	14	0.24	0.13–0.40	38	0.44	0.31–0.61
All functional psychoses[5]									
All admissions	461	1.43	1.30–1.57	378	0.53	0.48–0.59	839	0.81	0.76–0.87
First admissions	196	3.57	3.09–4.11	177	1.46	1.25–1.69	373	2.11	1.91–2.34
Readmissions	265	0.99	0.88–1.12	201	0.34	0.29–0.39	466	0.54	0.49–0.59
All functional psychoses+294.49[6]									
All admissions							1133	1.09	1.03–1.16
First admissions							567	3.21	2.96–3.49
Readmissions							566	0.66	0.61–0.723

1. ICD–8: 296.
2. ICD–8: 295.
3. ICD–8: 298–298.89.
4. ICD–8: 297, 298.99, 299.
5. ICD–8: 295–299.
6. ICD–8: 294.49+295–299.

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Diagnoses

ICD–8 diagnoses from 290–299 inclusive were registered. Fifteen patients admitted with a diagnosis of psychosis with an organic aetiology, ICD–8 290–294 inclusive (except 294.49, the diagnosis of puerperal psychosis) were excluded. The diagnoses are grouped as follows: schizophrenia: 295; manic depressive psychoses: 296; unipolar manic depressive psychoses: 296.09, 296.29; bipolar manic depressive psychoses: 296.19, 296.39; puerperal psychoses: 294.49; reactive psychoses: 298.09, 298.19, 298.29, 298.39, 298.89; unspecified psychoses: 297, 298.99, 299.

RESULTS

Incidence of post-partum psychosis

Of the 1 270 117 deliveries registered between 1973 and 1993, 1133 cases were admitted to a psychiatric hospital between days 2 and 91 after delivery, resulting in 0.89 cases per 1000 deliveries; 573 first admissions were registered resulting in an incidence of 0.45/1000 deliveries. One hundred and twenty admissions, 0.09 cases per 1000 deliveries, were registered as staying in a psychiatric hospital on the day of delivery, illustrating the psychiatric morbidity among women in labour.

The 1253 cases were represented by 1173 women; 78 women experienced more than one post-partum psychosis in relation to later deliveries.

Relative risk of admission after parturition

The relative risk (RR) of admission (Table 1) diagnosed as functional psychosis according to the above mentioned diagnostic categories (except puerperal psychoses) was slightly reduced (RR=0.81; 95% CI, 0.76–0.87). No separate calculations were made concerning the 294 patients diagnosed as puerperal psychoses (294.49). Obviously, it would not be meaningful to compare the rate of this diagnosis among women who had given birth to a child and to the rate of those who had not. However, it could be argued that these cases should be added when calculating the relative risk of admission to a psychiatric hospital with a psychosis during the puerperal period. When including these cases, the relative risk of admission diagnosed as any functional psychosis was slightly increased (RR=1.09; 95% CI, 1.03–1.16) and this is the relative risk that is most directly comparable with the risk reported by Kendell *et al* (1987).

The risk of a first admission (including puerperal psychoses) was highly increased (RR=3.21; 95% CI 2.96–3.49) whereas the risk of readmission (including puerperal psychoses) was reduced (RR=0.66; 95% CI 0.61–0.72). The relative risk regarding first admissions are the figures most relevant for the assessment of childbirth as a risk factor for the onset of psychoses, whereas the relative risk for readmission represents an estimate of the importance of childbirth as a risk factor for relapse in females with previous psychiatric admissions. This latter relative risk is possibly subject to a number of methodological problems, that are discussed below.

Relative risk of admission between day 2 and day 28 after delivery

The risk of a first admission diagnosed as a functional psychosis was highly increased (RR=3.57; 95% CI 3.09–4.11), whereas the risk of a readmission diagnosed as a functional psychosis was not significantly increased in this period (RR=0.99; 95% CI 0.88–1.12).

Among first admissions the risk of admission was increased in all diagnostic categories except in that of schizophrenia, among which the risk of admission was not increased (RR=0.95; 95% CI 0.31–2.21). Among readmissions the risk of a readmission diagnosed as schizophrenia was considerably reduced (RR=0.43; 95% CI 0.32–0.56). This was not compensated by the increased risk of readmission diagnosed as manic–depressive psychosis (RR=1.52; 95% CI 1.24–1.85) or as reactive psychosis (RR=1.69; 95% CI 1.36–2.08), and therefore the risk of readmission diagnosed as functional psychosis was not significantly increased during days 2–28.

Relative risk of admission between day 29 and day 91 after delivery

Regarding first admissions the risk of admission diagnosed as functional psychosis was still increased (RR=1.46; 95% CI 1.25–1.69), but the risk of readmission with a functional psychosis was reduced (RR=0.34; 95% CI 0.29–0.39). Among the different first admitted diagnostic categories the highest risk of first admission was found among women diagnosed as having manic–depressive psychoses (RR=1.70; 95% CI 1.28–2.23) and reactive psychoses (RR=1.68; 95% CI 1.38–2.02). First admissions diagnosed as unspecified psychoses were not significantly increased. The risk of readmission was reduced among all diagnostic categories.

Table 2 Temporal relationship between childbirth and relative risk (RR) of admission diagnosed as bipolar manic–depressive psychosis and unipolar manic–depressive psychosis

	Days 2–28			Days 29–91			Days 2–91		
	n	RR	95% CI	*n*	RR	95% CI	*n*	RR	95% CI
Bipolar manic depressive psychoses[1]									
All admissions	83	2.28	1.82–2.83	32	0.40	0.27–0.56	115	0.98	0.81–1.18
First admissions	21	6.82	4.22–10.42	7	1.03	0.41–2.11	28	2.83	1.88–4.09
Readmissions	62	1.86	1.43–2.39	25	0.38	0.25–0.56	87	0.81	0.65–1.00
Unipolar manic depressive psychoses[2]									
All admissions	43	1.35	0.98–1.82	75	1.07	0.84–1.34	118	1.16	0.96–1.38
First admissions	25	2.63	1.70–3.88	43	2.04	1.48–2.75	68	2.22	1.73–2.83
Readmissions	18	0.81	0.48–1.28	32	0.65	0.44–0.92	50	0.70	0.52–0.92

1. ICD–8: 296.19, 296.39.
2. ICD–8: 296.09, 296.29.

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The risk of readmission diagnosed as schizophrenia was as low as RR=0.16 (95% CI 0.11–0.21) and even more surprising, among readmissions diagnosed as manic–depressive psychoses the risk of readmission was reduced (RR=0.49; 95% CI 0.38–0.62). However, as described below, the admission pattern differed considerably between cases of unipolar depressives and bipolar disorders. Readmissions diagnosed as reactive psychoses were found to be reduced, but to a lesser degree than in all other diagnostic categories.

Relative risk of admission diagnosed as manic–depressive psychosis

First admitted bipolar manic–depressive patients had a highly increased risk of admission during the first 28 days after delivery (RR=6.82; 95% CI 4.22–10.42), after which period the risk of admission concerning first admitted bipolar women was not increased (Table 2). The same admission pattern was seen in the case of readmitted, bipolar women being admitted with an increased risk before 28 days after delivery (RR=1.86; 95% CI 1.43–2.39), but with a reduced risk of readmission in the total study period from days 1 to 90 (RR=0.81; 95% CI 0.65–1.00). First admitted unipolar manic–depressive women had an increased risk of admission during the whole study period (RR=2.22; 95% CI 1.73–2.83). Readmitted unipolar depressive patients were also admitted evenly in the study period, but with a reduced risk of readmission (RR=0.70; 95% CI 0.52–0.92).

Relative risk of admission before pregnancy

In this study 338 women were registered as discharged from psychiatric hospital between 0 and 12 months before pregnancy diagnosed as having a functional psychosis (Table 3). This is probably a smaller number than the number of admissions in the same period as women admitted to a psychiatric hospital in the last months before pregnancy would not all be registered as discharged at the end of this 12-month period. These 338 admissions one year before pregnancy resulted in a relative risk of admission 0.08 (95% 0.07–0.09) among women who were all going to have a delivery. Even if the number of women discharged during the period of pregnancy and the number of women registered as being hospitalised on the day of delivery were added this would result in a relative risk of admission in a period of 21 months before delivery of 0.077 (95% CI 0.07–0.08).

DISCUSSION

Incidence of post-partum psychoses

The incidence of post-partum psychoses found in this study, 0.89/1000 deliveries concerning all admissions, was lower compared with the incidence of 1–2/1000 deliveries found in earlier studies (Rehman *et al*, 1990; Kumar, 1994). The incidence of first admitted post-partum psychoses found in this study, 0.45/1000 deliveries, was not different from the incidence found in another Danish study by Videbech & Gouliaev (1995) of 1/2000 deliveries. It does not seem sensible to assume that the risk of post-partum psychosis is lower in the Danish population compared with populations outside Denmark. As stated earlier the number of hospital beds has declined in Denmark during the observation period, and this may have influenced the admission rate. Also, 120 women were registered as being admitted on the day of delivery. The question is whether those women would be included in other investigations. If 120 women are added as post-partum psychoses the incidence of post-partum psychosis is 0.99 per 1000 deliveries, which is comparable to the results found in other studies (Kumar, 1994).

Relative risk of post-partum psychoses

If the 294 cases diagnosed as puerperal psychosis were included in the calculations concerning the relative risk of admission with a diagnosis of any functional psychosis from day 2 to day 91, the relative risk of admission with a diagnosis of any functional psychosis was 1.09 (95% CI 1.03–1.16)

Table 3 Temporal relationship between rates of discharge from psychiatric hospital and childbirth

	Successive periods before delivery (three-month periods)		Number of women discharged diagnosed with a functional psychosis[1]			
	Months	Total	Observed[2]	Expected[3]	RR	95% CI
Pre-pregnancy	19–21		84	1035.3		
	16–18		88	1035.3		
	13–15		85	1035.3		
	10–12		81	1035.3		
		10–21	338	4141.0	0.08	(0.07–0.09)
Pregnancy	7–9		30	1035.3		
	4–6		30	1035.3		
	1–3		38	1035.3		
		1–9	98	3105.8	0.032	(0.026–0.038)
21 months before delivery		1–21[4]	556	7246.8	0.077	(0.07–0.08)

1. Defined as ICD–8: 295, 296, 297, 298 and 299.
2. Number of women discharged from psychiatric hospital before delivery.
3. Number of women expected to be admitted to psychiatric hospital before delivery.
4. Including 120 women being registered as staying at psychiatric hospital on the day of delivery.

RR, relative risk.

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which was much lower than the relative risk found in Kendell *et al*'s (1987) study.

Kendell *et al* (1987) calculated a 'relative risk' of admission to a psychiatric hospital with a psychosis of 12.7 over the first 90 days and 21.7 over the first 30 days. For two years after childbirth the relative risk of admission remained increased at 2.1 concerning all psychoses. Kendell *et al* calculated the relative risk of admission diagnosed as functional psychosis as the ratio of the number of psychiatric admissions immediately after childbirth to the average admission rate concerning the same women two years before childbirth. In this way the women were their own control group. Kendell *et al* registered 120 admissions up to 90 days after delivery, 74 being first admissions. Forty-nine women had been admitted with a functional psychosis 24 months before delivery.

The high relative risk found in the Kendell *et al* study may be related to using pre-pregnancy rates of admission for comparison. Calculations of pre-pregnancy rates of admission in this study show that the admission rate before pregnancy is much reduced compared with the admission rate among women in general (RR=0.08; 95% CI 0.07–0.09). Kendell *et al*'s population consisted of 74 first admissions, and only 49 women had been admitted before delivery. Among the 49 women with a prior psychiatric history some women may have avoided pregnancy because of psychotic illness, this would certainly lower the readmission rate 10 to 24 months before childbirth, which Kendell *et al* used as a baseline for their relative risk calculations. This could explain why the risk found by Kendell *et al*, is high, and it may also explain why the risk they found is about 10 times the risk found in our study.

The low relative risks found in this study are probably caused by the denominator in the ratio, from which the relative risk is derived, being much higher in this study, as we included all women whether they were parous or not. Some nulliparous women will be disabled by recurring psychiatric illness, and this will increase the denominator and therefore lower the relative risks found in this study. A reduced fertility among women who have not yet been hospitalised with psychiatric illness will lower the risk even more. In conclusion, the relative risk of admission diagnosed as post-partum psychosis is relatively low in this study, because our control group may generate a relative high rate of mental disorder. On the other hand Kendell *et al*'s 1987 control group may be biased towards a low rate of mental disorder. Still, we find it valuable to relate the risk of post-partum admission to the general admission rate among women whether they are parous or not.

The relative risk of a first admission with a diagnosis of functional psychosis was 3.21 (95% CI 2.96–3.49) and the relative risk of being readmitted was 0.66 (95% CI 0.61–0.72). No other study exists separating first admissions and readmissions.

The reduced readmission rate could be caused by a reduced fertility rate among women with a previous psychiatric admission. In this study rates of mental disorder in relation to childbirth were based on the assumption that the fertility rate was the same among mentally ill women and women in the general Danish female population. If the fertility rate was reduced among certain diagnostic categories, meaning that a relatively smaller proportion of these women at any given time were in their puerperal period, the calculated rates of mental illness in relation to the number of deliveries in the general population of women would be too high compared to the observed number of admissions in the same diagnostic categories. This would result in a reduced relative risk of admission. Also, if patients with a course characterised by many recurring episodes of illness had a particularly reduced fertility, this would lead to the same bias.

Schizophrenia

The risk of readmission from day 2 to day 91 with a diagnosis of schizophrenia was very much reduced (RR=0.24; 95% CI 0.20–0.30). This reduced risk of readmission could be caused by a reduced fertility rate. There is evidence that the fertility rate is reduced among people with schizophrenia, values from 30–80% of that of the general population having been suggested (Haverkamp *et al*, 1982).

This study raises the question whether the fertility rate among Danish people with schizophrenia is lower than in the above mentioned investigations, as the relative risk of admission of 0.25 (95% CI 0.20–0.30) found in this study would indicate a reduced fertility rate of 25% if this alone was to explain the considerably reduced relative risk of admission. The Danish concept of schizophrenia is narrow (Munk-Jørgensen, 1995), and this may be associated with a lower fertility rate than in the above mentioned investigations. Another explanation could be that schizophrenic women are already admitted during pregnancy. The number of admissions diagnosed as schizophrenia already reached a maximum in week 1 after delivery and among the 120 patients registered as admitted on the day of delivery 55 (45.8%) had a diagnosis of schizophrenia. If the 55 patients with schizophrenia admitted during pregnancy had been added to the 102 patients with schizophrenia admitted after delivery, this would have resulted in a relative risk of admission of 0.35, which is still very much reduced. Finally the possibility that women with schizophrenia experience an amelioration of their symptoms during the puerperal period cannot be excluded. McNeil (1987) found that among women with a prior functional psychosis, women diagnosed with schizophrenia had the lowest risk of readmission in relation to delivery.

Manic–depressive illness

The reduced relative risk of readmission among manic–depressive patients, RR=0.81 (95% CI 0.69–0.94) also raises the question whether the post-psychotic fertility rate among manic–depressive women is reduced. Jonsson (1991) found a reduced pre-psychotic fertility rate among women with affective illness, but the post-psychotic fertility rate was close to normal. In this study readmitted manic–depressive patients had a reduced relative risk of readmission, whether they were unipolar or bipolar, indicating that both unipolar and bipolar patients may have a reduced post-psychotic fertility rate.

Another hypothesis concerning readmitted women in general may be that childbirth protects against psychiatric illness or that women who later become pregnant, despite earlier psychiatric illness, are more healthy than other readmitted women, who do not choose to become pregnant. This hypothesis is not consistent with the finding by Kendell *et al* (1987), who found that women with a prior manic–depressive illness had an increased admission rate after delivery. We are not able to clarify this issue, as we did not register diagnoses at prior admissions in this study.

In the present study it was found that both first admitted and readmitted bipolar manic–depressive patients had an increased

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relative risk of admission within four weeks after delivery, as described previously by others (Brockington *et al*, 1981; Dean & Kendell, 1981). There was no general tendency during the first 91 days after parturition to see a manic syndrome as the relative risk of admission with a bipolar manic–depressive psychosis was not increased from day 2 to day 91. However, the first admission rate with mania or circular manic–depressive illness was highly increased before 28 days after delivery. The hypothesis that childbirth is strongly related to first onset of bipolar disorders as well as other affective disorders may be proposed.

Bipolar and unipolar patients had a very different admission pattern in relation to delivery. Bipolar patients were admitted immediately after delivery, whereas unipolar patients were admitted evenly during the period of observation, and at the end of this first admitted unipolar manic–depressive women still had an increased admission rate. From this study it cannot be said for how long a time after delivery this increased admission rate would persist.

The diagnoses in this study are clinical diagnoses according to ICD–8. This system has broad criteria compared to ICD–10 (World Health Organization, 1992) and it may be argued that the classification in this study only indicates whether the woman is psychotic or not. The results concerning schizophrenia and manic–depressive illness should be studied by reclassification of case notes by ICD–10 criteria.

The risk of being admitted to a psychiatric hospital for the first time in a woman's life is considerably increased after a delivery, although the risk may be much lower than previously assumed. An effective ante- and postnatal liaison service including psychiatrists, general practitioners, midwives and community nurses should be established, as previously proposed by Appleby *et al* (1989). The question is, whether early diagnosis and early treatment might have an effect on the long term prognosis of these women.

CLINICAL IMPLICATIONS

- Compared with the psychiatric admission rate among women in the general Danish population the admission rate is only slightly increased post-partum.
- The admission rate concerning first admissions is highly increased post-partum.
- The admission rate is much reduced post-partum among women diagnosed with schizophrenia.

LIMITATIONS

- Using ICD–8 diagnoses is a shortcoming, the individual diagnoses should be reclassified according to ICD–10.
- Out-patients were not registered in the study period.
- It is not known whether there are fertility differences among women with prior admissions.

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