Cause-specific mortality in psychiatric patients after deinstitutionalisation

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Background Since the late 1970s, the psychiatric service system in Norway has been changed gradually according to the principles of deinstitutionalisation.

Aims To document the mortality of psychiatric patients in a deinstitutionalised service system.

Methods The case register of a psychiatric hospital covering the period 1980–1992 was linked to the Central Register of Deaths. Age-adjusted death rates and standardised mortality ratios (SMRs) were computed.

Results Patients with organic psychiatric disorders had significantly higher mortality regardless of cause of death. SMRs ranged from 0.9 for death by cancer in women to 36.3 for suicide in men. For unnatural death, SMRs were highest in the first year after discharge. Compared to the periods 1950–1962 and 1963–1974, there has been an increase in SMRs for cardiovascular death and suicide in both genders.

Conclusions Deinstitutionalisation seems to have had as its cost a relative rise both in cardiovascular death and unnatural deaths for both genders, but most pronounced in men.

There is a need for constant surveillance of the mortality of psychiatric patients, as a hard-fact indicator of the quality of different care systems as they evolve over time. In the two northernmost counties of Norway, the number of beds at the only psychiatric hospital was reduced by 50% in the course of a few months in the spring of 1980. From then on, out-patient services were built up gradually, at a similar pace as for the rest of Norway, eventually reaching a ratio of professionals-to-population of 28.7 per 100 000 inhabitants in 1992. Although the reduction in the number of beds was more abrupt than in the rest of Norway, the changes in the service system to a large degree mirror the development of psychiatric services based on the principles of deinstitutionalisation in Norway as a whole.

METHOD

At the only psychiatric hospital for the two counties Troms and Finnmark, Åsgård Hospital, information about each admission has been computerised since the late 1970s. The first years were incomplete, and the computerised register was checked for reliability against patient records by V.H. for admissions from 1 January 1980 to 31 December 1992. The available information for each admission was: the unique 11-digit number assigned to every resident of Norway; date of admission; date of discharge; municipality of residence; diagnosis at discharge; whether it was a first-ever admission; and whether the admission was compulsory or not. The monthly admission rates at the hospital were stable throughout the first half of 1980, followed by an abrupt fall from 1 August 1980 onwards, when the hospital was reorganised. Therefore, the present study is restricted to persons admitted to the hospital from 1 August 1980 to 31 December 1992. In this 12.5-year period, there were 5760 admissions,

concerning 1998 patients (943 women and 1055 men). Of these, 1089 people (55%) were admitted to a mental hospital for the first time ever. For three patients, it could not be established whether they had been admitted before; the remaining 906 people had been admitted at least once before 1 August 1980. The unique personal identification number was used for linkage to the computerised cumulative file of all deaths in Norway, kept by the Central Bureau of Statistics. The register contains information from the death certificate issued by a physician. There is virtually no loss due to missing registration of deaths, but the cause of death may, in rare cases, by missing. The 1998 patients were observed from date of admission until death, moving abroad or the end of 1992, for a total observation time of 11 463 person-years.

The Central Bureau of Statistics codes death certificates according to the current International Classification of Diseases (ICD), up to 1985 according to the 8th version of ICD (ICD–8; World Health Organization, 1974), and from 1986 the 9th version (ICD–9; World Health Organization, 1978). Up to four diagnoses may be coded, and the diagnosis recorded by the Central Bureau of Statistics as the underlying cause of death is used in this study.

In some of the analyses, we divided the sample in two on the basis of the discharge diagnosis at the last discharge: organic psychiatric disorders (ICD–9 codes 290–294, 310, 316) and non-organic psychiatric disorders (ICD–9 codes 295–309, 311–313.1, 318–319, 780.4, V71.0). The reason for this division was that in earlier studies (Saugstad & Ødegård, 1979; Black et al, 1985a) it was found that the mortality rates and the pattern of causes of death differ markedly between these two groups. The organic disorders group comprised 128 men observed for 435 person-years and 91 women observed for 323 person-years, while the non-organic disorders group comprised 927 men observed for 5559 person-years and 852 women observed for 5146 person-years.

Age adjustments of the results were carried out by direct and indirect methods. The direct method was used for internal comparisons between subgroups in the sample. For these analyses, the distribution of person-years in the different age groups in the total patient population is used as standard. Statistical testing of differences between mortality rates was done with

Poisson regression, including person-years, age and number of deaths in the analyses. The risk of dying in different subgroups within the patient population was tested with Cox regression, with age, gender and diagnostic group and commitment status as predictors of death during follow-up. For commitment status, the reference group was persons that had been committed at all their admissions. For diagnostic groups, schizophrenia/paranoid psychosis was used as reference.

For comparison with the mortality of the general population of Norway, indirect age adjustment was used. This method involves calculation of the number of deaths to be expected among the patients, if the mortality rates of the general population in 1986 had prevailed. The ratio of the observed to the expected number of deaths in this subgroup, the standardised mortality ratio (SMR), expresses the relative mortality of the patient group compared to that of the general population. Confidence intervals for the SMRs were computed according to the Poisson distribution. Statistical analyses were performed with EGRET (Statistics and Epidemiology Research, Corporation, 1991) and SAS (SAS Institute, 1990).

RESULTS

The linkage revealed that 328 (16%) of the 1998 patients died during follow-up. Twelve people had moved abroad and information about possible death after emigration was not available.

Table 1 shows the differences in mortality rates between men and women, for all psychiatric disorders. Men had the highest age-adjusted mortality rates, with rate ratios twice those of women.

The age-adjusted mortality rates and mortality compared with that of the general population of Norway are described in Tables 2 and 3.

Patients with organic psychiatric disorders had significantly higher mortality than those with non-organic disorders, regardless of cause of death. The only exceptions were cardiovascular diseases and accidents in women, with no difference between the organic and the non-organic groups. The rate ratio for total mortality in the organic *v.* the non-organic groups was 2.4 (95% CI 1.7–3.5) for men and 2.2 (95% CI 1.4–3.4) for women.

Overall, the SMR for men was 3.2 (95% CI 2.8–3.7) and for women 2.4 (95% CI 2.0–2.9). In both genders and both main groups of psychiatric disorder, the total mortality in the patients was 2–4 times that of the general population, the highest mortality being found in men. As could be expected, the highest SMRs concern suicide in both genders. The SMRs are significantly increased for all causes of death except for cancer in men. In contrast to men, there is no significant increase in the SMR due to cardiovascular disease in women with an organic psychiatric disorder.

Table 1 Crude and age-adjusted mortality rates per 1000 person-years at risk, and rate-ratio (RR)[1] according to gender and cause of death

	Men, rates per 1000 person-years			Women, rates per 1000 person-years			Men *v.* women	
	Deaths	Crude	Age-adjusted	Deaths	Crude	Age-adjusted	RR	P
Natural causes	137	22.9	28.7	92	16.8	13.5	2.1	<0.001
Cancer	21	3.5	4.2	17	3.1	2.6	1.6	0.14
Cardiovascular diseases	64	10.7	13.5	43	7.9	6.2	2.2	<0.001
Other diseases	52	8.7	11.1	32	5.9	4.6	2.4	<0.001
Unnatural causes	67	11.2	11.1	32	5.9	5.4	2.0	0.001
Suicide	50	8.3	8.2	23	4.2	3.9	2.0	0.005
Accidents	17	2.8	2.9	9	1.7	1.5	1.9	0.12
Total mortality	204	34.0	39.8	124	22.7	18.8	2.1	<0.001

1. Rate ratio for men *v.* women, P value for test of RR=1.0.

Table 2 Age-adjusted mortality rates per 1000 person-years at risk, observed and expected number of deaths and standardised mortality ratios (SMR) by cause of death in 1055 men admitted to mental hospital

	Organic psychiatric conditions							
	Yes (*n*=128)				No (*n*=927)			
	Rate	Observed	Expected	SMR (95% CI)	Rate	Observed	Expected	SMR (95% CI)
Natural death	59.6	53	14.4	4.0 (3.1–5.1)	21.4	84	38.4	2.2 (1.7–2.7)
Cancer	7.4	6	3.2	1.9 (0.7–4.1)	3.5	15	10.2	1.4 (0.8–2.4)
Cardiovascular disease	20.4	22	7.7	2.9 (1.8–4.3)	10.9	42	20.1	2.1 (1.5–2.8)
Other diseases	31.8	25	3.4	7.3 (4.7–10.8)	7.0	27	8.2	3.3 (2.2–4.8)
Unnatural death	21.6	7	0.6	11.0 (4.4–22.6)	10.6	60	4.6	13.1 (10.0–16.9)
Suicide	15.0	4	0.11	36.3 (9.9–93.0)	8.0	46	1.5	31.2 (22.9–41.7)
Accidents	6.7	3	0.53	5.7 (1.2–16.6)	2.5	14	3.1	4.5 (2.5–7.6)
Total	81.2	60	15.0	4.0 (3.1–5.1)	31.9	144	43.0	3.4 (2.8–3.9)

Table 3 Age-adjusted mortality rates per 1000 person-years at risk, observed and expected number of deaths and standardised mortality ratios (SMR) by cause of death in 943 women admitted to mental hospital

| | Organic psychiatric conditions | | | | | | | |
| | Yes (n=91) | | | | No (n=852) | | | |
	Rate	Observed	Expected	SMR (95% CI)	Rate	Observed	Expected	SMR (95% CI)
Natural death	30.1	34	11.5	2.9 (2.0–4.0)	10.7	58	35.3	1.7 (1.3–2.1)
Cancer	10.4	7	2.1	3.3 (1.3–6.8)	1.8	10	10.8	0.9 (0.4–1.7)
Cardiovascular disease	6.1	8	6.4	1.3 (0.5–2.5)	6.5	35	16.5	2.1 (1.5–3.0)
Other diseases	13.6	19	3.0	6.3 (3.8–9.8)	2.5	13	7.9	1.6 (0.9–2.8)
Unnatural death	5.9	1	0.5	1.9 (0.05–10.4)	5.6	31	1.9	16.0 (10.8–22.6)
Suicide	5.9	1	0.03	33.6 (0.9–187.0)	3.9	22	0.55	40.0 (25.0–60.4)
Accidents	0	0	0.51	0 (0–7.3)	1.6	9	1.4	6.5 (3.0–12.3)
Total	36.0	35	12.0	2.9 (2.0–4.0)	16.2	89	37.2	2.4 (1.9–3.0)

To assess the independent effects of age, gender, psychiatric diagnosis and commitment status, Cox regression analyses were done separately for the largest groups of causes of death: all natural causes, cardiovascular disease, 'other diseases' (excluding cancer) and unnatural death (Table 4). There were no differences in risk according to commitment status for any of the causes of death, and commitment status was therefore omitted from the presented analyses.

These analyses were restricted to the 1089 patients who were admitted for the first time ever in the given period. For all causes of death in Table 4, men had higher risk than women. For unnatural death, men had a risk ratio relative to women of 2.4. For unnatural death, the mortality risk was not dependent upon age, whereas for the other causes risk increased with each 10-year increment in age group. People

with organic psychiatric disorder had higher risk than patients with schizophrenia/paranoia of dying of natural causes or other diseases.

Table 5 shows the mortality rates and the SMRs according to time since admission. For death from disease, the mortality in men in the first year after discharge is higher than later on. Apart from that, there are no differences in mortality from diseases according to time since admission. For unnatural death, and especially for suicide, the mortality is high while admitted, but is by far greatest in the first year after discharge, for both genders. These analyses were also performed on the subgroup of first-admitted patients, and a similar pattern was shown.

The mortality of psychiatric patients in Norway in 1950–1962 and 1963–1974 has been reported by Saugstad & Ødegård

(1985), but only for the functional psychoses (ICD–9 codes 295–298).

Table 6 gives a comparison of the mortality in three periods, using Saugstad & Ødegård's data and our own, in the subgroup of functional psychosis. It shows a significant increase in SMRs in psychiatric patients in the period we have studied, most pronounced for unnatural death, but also for cardiovascular disease and total mortality in men.

DISCUSSION

Methodological considerations

In general, the SMRs found in this study are quite high compared with most other studies of patients admitted to psychiatric hospitals (Haugland *et al*, 1983; Saugstad & Ødegård, 1985; Black *et al*, 1985*b*; Zilber *et al*, 1989; Hewer *et al*, 1995; Saku *et al*,

Table 4 Relative risk (RR) for cause of death, according to age, gender and psychiatric diagnosis in 1089 first-ever admitted patients

| | | Natural death | | Cardiovascular death | | Death from other diseases | | Unnatural death | | Total | |
	n	RR (95% CI)	P	RR (95% CI)	P	RR (95% CI)	P	RR (95% CI)	P	RR (95% CI)	P
Increasing age[1]	1089	1.9 (1.7–2.2)	<0.001	2.4 (1.9–3.0)	<0.001	1.8 (1.5–2.2)	<0.001	1.1 (1.0–1.4)	0.12	1.6 (1.4–1.7)	<0.001
Gender											
Female	494	1.0		1.0		1.0		1.0		1.0	
Male	595	1.8 (1.2–2.6)	0.002	1.9 (1.1–3.5)	0.03	1.5 (0.9–2.7)	0.14	2.4 (1.3–4.4)	0.005	2.0 (1.4–2.7)	<0.001
Diagnosis											
Schizophrenia/ paranoid psychosis	257	1.0		1.0		1.0		1.0		1.0	
Organic psychosis	130	3.6 (1.8–7.1)	<0.001	2.4 (0.9–6.8)	0.10	4.6 (1.7–12.6)	0.003	0.3 (0.06–1.3)	0.11	2.4 (1.4–2.7)	0.001
Other psychosis	134	1.7 (0.8–4.0)	0.20	2.1 (0.6–7.3)	0.25	1.0 (0.2–4.0)	0.9	0.5 (0.2–1.6)	0.24	1.0 (0.5–1.9)	0.9
Mood disorder	315	0.9 (0.4–1.9)	0.77	1.4 (0.5–4.0)	0.58	0.3 (0.1–1.2)	0.10	1.3 (0.7–2.7)	0.39	1.0 (0.6–1.6)	0.2
Other diagnoses	253	0.9 (0.4–2.1)	0.74	0.6 (0.1–3.0)	0.51	1.1 (0.3–3.6)	0.88	0.6 (0.2–1.5)	0.30	0.7 (0.4–1.3)	0.05

1. Ten-year age increments. Schizophrenia/paranoid psychosis: ICD–9 codes 295 and 297. Organic psychosis: ICD–9 codes 290, 293, 294. Other psychosis: ICD–9 codes 291, 292–298.2, 298.6–299.9. Mood disorder: ICD–9 codes 296, 298.1, 300.4, 309.0, 309.1, 311.0. Other disorder: ICD–9 codes 300.0–300.3, 300.5–308.9, 309.2–310.9, 311.1–793.9.

Table 5 Age-adjusted mortality rates per 1000 person-years at risk, and standardised mortality ratios (SMR), by gender and time since admission

Time since admission	Men				Women			
	Rate	Observed	Expected	SMR (95% CI)	Rate	Observed	Expected	SMR (95% CI)
Diseases								
During last admission	50.9	11	3.4	3.3 (1.6–5.8)	46.0	10	2.7	3.7 (1.8–6.9)
After last discharge								
First year	49.9	40	9.3	4.3 (3.1–5.9)	17.0	17	8.0	2.1 (1.2–3.4)
Second/third year	30.5	37	14.4	2.6 (1.8–3.4)	12.5	22	13.7	1.6 (1.0–2.4)
More than 3 years	23.3	49	24.4	2.0 (1.5–2.7)	14.4	43	19.8	2.2 (1.6–2.9)
Unnatural death								
During last admission	36.9	8	0.24	32.8 (14.2–64.6)	12.1	3	0.14	21.4 (4.4–62.6)
After last discharge								
First year	42.3	36	0.8	45.8 (31.3–69.9)	21.1	20	0.4	50.2 (30.5–77.2)
Second/third year	8.2	10	1.2	8.5 (4.1–15.7)	2.3	4	0.7	5.6 (1.6–15.0)
More than 3 years	6.2	13	1.9	6.8 (3.6–11.6)	3.8	5	1.0	5.1 (1.0–11.8)
Suicide								
During last admission	26.6	6	0.06	92.8 (34.1–202.0)	3.1	1	0.02	46.7 (1.2–260.1)
After last discharge								
First year	35.1	30	0.2	133.6 (90.1–190.7)	21.7	17	0.08	208.5 (121.5–333.9)
Second/third year	4.9	6	0.3	18.4 (6.7–40.0)	0.7	1	0.12	8.1 (0.2–45.3)
More than 3 years	4.0	8	0.6	14.6 (6.3–28.7)	3.1	4	0.2	20.0 (5.5–51.1)

Table 6 Standardised mortality ratios (SMR) in the functional psychoses (ICD–9 codes 295–298) in Norway in three periods

Cause of death	SMR (95% CI)		
	1950–1962[1]	1963–1974[1]	1980–1992[2]
Men			
Cancer	0.8 (0.7–0.9)	0.8 (0.7–0.9)	1.5 (0.4–1.9)
Cardiovascular disease	1.3 (1.2–1.4)	1.4 (1.3–1.5)	2.1 (1.5–3.0)
Other diseases	3.2 (3.0–3.4)	2.1 (1.9–2.3)	2.7 (1.5–4.3)
Unnatural death	1.6 (1.3–1.9)	4.0 (3.6–4.4)	11.9 (8.4–16.4)
Total	1.9 (1.8–2.0)	1.7 (1.6–1.8)	3.0 (2.4–3.7)
Women			
Cancer	1.0 (0.9–1.2)	1.2 (1.0–1.4)	0.9 (0.4–1.9)
Cardiovascular disease	1.3 (1.1–1.5)	1.7 (1.5–1.9)	2.3 (1.5–3.4)
Other diseases	4.1 (3.9–4.3)	1.8 (1.7–1.9)	2.0 (1.0–3.6)
Unnatural death	3.3 (2.6–4.1)	8.8 (7.7–10.0)	15.7 (9.7–24.0)
Total	2.5 (2.4–2.6)	2.3 (2.2–2.4)	2.5 (1.9–3.2)

1. Data from Saugstad & Ødegård, 1985. 95% CI computed by the present authors.
2. Data from the present study.

1995). One reason for this could be that the tracing of patients is complete in our study. The mortality status could not be ascertained by the end of follow-up in only 12 patients who had emigrated (0.6% of sample), and these were censored at time of emigration. As Sims (1973) demonstrated many years ago, a high trace-rate is crucial in follow-up studies of mortality in psychiatric patients, as the mortality in the less easily traced group is likely to be considerably higher than in those who can be easily traced.

Two approximations were applied when comparing with the mortality of the general population: the mortality of the total population in Norway, and only that for the middle year of the period (1986). The mortality did not change very much in Norway in the period 1980–1992, apart from a certain reduction in all causes of mortality in men. Also, the mortality in Troms and Finnmark does not differ much from that of the total population of Norway. Previously when analysing all causes of mortality (Hansen *et al*, 1997), we used the rates for the population of Troms and Finnmark for comparison, and the differences in SMRs – compared with when we used the rates for the total population of Norway – were negligible. The consequences of these approximations, then, are probably minimal.

Deinstitutionalisation in Norway

Reorganisation of psychiatric services began in a slow and uncoordinated manner in Norway in the mid 1970s (Lavik, 1987). In the beginning, the reduction of beds in psychiatric departments was compensated by an increase of beds in psychiatric nursing homes. A gradual reduction in the total number of beds began in the early 1980s, and by 1992, the beds-to-population ratio had been reduced by 44% compared with the level in 1980 (166 beds per 100 000 population in 1992). At the same time, out-patient services were gradually built up, reaching a level of 25.6 employees per 100 000 population in 1992, an increase of 60% since 1980. As mentioned, the reduction of beds came about very abruptly

in the two northernmost counties, Troms and Finnmark, as a result of lack of personnel at the only psychiatric hospital for the area, Åsgård Hospital. The number of beds at the hospital was reduced by 50% in the course of a few months, mirrored in an abrupt fall in the number of admissions to the hospital from 1 August 1980. From then on, the beds-to-population ratio has been fairly constant at 45 per 100 000 inhabitants, one of the lowest in Norway. The hospital has been in the forefront of Norwegian psychiatry since the early 1970s, because of its optimistic treatment philosophy and care outside hospital. Interdisciplinary teams were sent out into the districts to cooperate with primary care in trying to keep patients out of hospital. Separate out-patient facilities did not exist in 1980, but were created and built up from then onwards. The ratio of personnel-to-population in out-patient services in 1981 was only 7.1 per 100 000 inhabitants, and the units did not have a psychiatrist for most of the period studied. Nevertheless, the building of out-patient services was rapid from about 1984, and by 1992 the personnel-to-population ratio was higher than in Norway as a whole, at 28.7 per 100 000 inhabitants. Taking into consideration that most of the deaths in the present study occurred towards the end of the period, we think that patients in Troms and Finnmark have been exposed to much the same kind of service organisation as in the rest of Norway, even if the number of beds available in the period has been definitely lower.

Mortality in psychiatric patients

It is well established that people with mental disorders run a higher risk of premature death than the general population. This was confirmed for all mental disorders by Harris & Barraclough (1997, 1998) in two large meta-analyses. There is a large body of literature concerning different causes of death in different care systems and different patient groups. These studies are, however, difficult to compare and seldom give a comprehensive picture of the quality of a single service system regarding all patient groups. To our knowledge, there are very few studies that report both natural and unnatural causes of death in all groups of psychiatric patients within the now prevailing deinstitutionalised mode of organisation of psychiatric services in the Western world (Haugland *et al*, 1983; Amaddeo *et al*, 1995). In an earlier paper

(Hansen *et al*, 1997), we have documented that in both genders, the rate of mortality from all causes is high in psychiatric patients within such an organisation in northern Norway.

In the present analyses of the specific causes of death, men have twice the death rate of women, both from natural and unnatural causes. SMRs are also higher in men. Only four studies give figures for the genders separately (Ødegård, 1936, 1951; Haugland *et al*, 1983; Saku *et al*, 1995). These report higher SMRs in women than in men, but these studies are from earlier time periods than ours.

We can confirm previous findings of higher mortality in patients with organic rather than non-organic psychiatric conditions (Black *et al*, 1985*a*). The causes of death, however, do not differ much in the two groups. In both men and women, the highest death rates are from natural causes; in the organic psychiatric disorder group the highest risk is from 'other disease', while in the non-organic groups the highest risk is from cardiovascular diseases. Relative to the general population, both men and women have significantly higher death rates from natural causes. This emphasises the importance of thorough physical examinations of patients on admission to mental hospital and at follow-up after discharge. At present, it is not the long stays in overcrowded hospitals that cause the excess mortality due to natural causes, but more probably the lifestyle of patients with psychiatric disorders, for example, obesity, alcohol misuse and smoking.

Of the differences in mortality between the five diagnostic groups analysed here, only patients with organic psychoses have a significantly higher relative risk than patients with schizophrenia or paranoid psychosis. It is worth noting, for instance, that people with mood disorders do not have a higher risk of unnatural death than those with schizophrenia.

The mortality of psychiatric patients due to cancer has been debated for decades, since it has been the only cause of death in psychiatric patients that has not consistently been found to be elevated in relation to the general population (Mortensen, 1994). Our finding that cancer mortality in psychiatric patients is similar to that of the general population is in keeping with most other studies (Harris & Barraclough, 1998). The matter has been most extensively studied in schizophrenia (Saku *et al*, 1995), but in our study, the number of

deaths is too low to permit a further subdivision into diagnostic groups for each cause of death.

Our study confirms that, relative to the general population, both men and women with serious psychiatric disorders have very high suicide rates – about 30 times higher. This holds true even for men with organic psychiatric conditions. In the first year after discharge, the risk is especially high; this finding has also been confirmed by others (Goldacre *et al*, 1993; Geddes *et al*, 1997).

Earlier mortality studies in Norway

We have no data on the mortality of psychiatric patients in northern Norway in the institution-based system before 1980. However, Norway is one of the few countries where it is possible to follow the mortality of psychiatric patients for most of the 20th century, thanks to Ødegård, the creator of the first nationwide psychiatric case register in the world. He has documented the mortality of psychiatric patients in Norway in different periods from 1916 to 1974 (Ødegård, 1936, 1952, 1967; Saugstad & Ødegård, 1985). In an earlier publication (Hansen *et al*, 1997), we recalculated his data on total mortality, making the mortality in the period 1926–1941 directly comparable with the period 1980–1992. The main findings were that the mortality rate of female psychiatric patients had declined by 67%, but for male psychiatric patients by only 30%. For specific causes, however, Ødegård has not presented data that would make recalculation possible. Furthermore, he only presents data for death while the patients are inside the hospital, thereby overestimating the mortality of patients. With these reservations, it is quite remarkable that compared with the situation in the period 1963–1974, the SMR values for death by unnatural causes has been doubled in females and almost tripled in males, and risen considerably for death by cardiovascular disease in men. This trend was evident already in the period 1963–1974. However, the suicide rate in the Norwegian population increased very little from 1950–1962 to 1963–1974, but doubled from 1963–1974 to 1980–1990. Consequently, to achieve the recorded rise in the SMR between 1963–1974 and 1980–1992, when the population's suicide rate as a whole increased greatly, requires a far higher number of deaths among

psychiatric patients in the latter period. However, there are great differences between men and women in this respect. Between 1963–1974 and 1980–1992, the total mortality of women in Norway declined by 20%, but only by 8% in men (Central Bureau of Statistics, 1994). In northern Norwegian psychiatric patients, however, the mortality rates for women declined by 13%, but increased by 62% for men. It seems, therefore, that it is the male psychiatric patients that the new deinstitutionalised system has been unable to take care of.

Saugstad & Ødegård (1985) attribute the increase between the 1950–1962 and 1963–1974 periods to the changes in the hospital environment, that is, activation and liberalisation. Deinstitutionalisation, of course, implies even less protection and more freedom for the patients than the changes in hospital environment in 1963–1974. It is a paradox, then, that the more humane service system in reality leads to more men dying.

Another point to emphasise is that even though the SMR values for suicide are very high, the mortality due to natural causes in both genders is more than three times higher than for suicide. Thus, even if some of this excess mortality from both physical and psychiatric causes is inevitable owing to the seriousness of the diseases, prevention of physical diseases may be just as important and as challenging as suicide prevention in this group of patients.

CLINICAL IMPLICATIONS

- The physical health of psychiatric patients must be kept under constant surveillance, both during hospital stay and after discharge.

- As the highest risk of suicide is in the first year after discharge, the aftercare should be especially organised to prevent suicide in this period.

- Efforts should be made to motivate psychiatric patients towards a more healthy lifestyle.

LIMITATIONS

- The comparison with earlier time periods in Norway is hampered by lack of data that are directly comparable.

- The results may not be generalisable to other deinstitutionalised service systems with more resources in out-patient care.

- In spite of high mortality, there is a limited number of deaths in some subgroups.

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