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Educational level and hospital use in mental disorders

A population-based study

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This population-based study presents socioeconomic differences in psychiatric inpatient care by diagnosis. Inpatient care among the Finnish population aged 25–64 years was studied using data from the Finnish National Hospital Discharge Register. All major mental disorders in the ICD-9 were included in the study. The socioeconomic status of individual patients was defined by years of education in the population census. Discharge rates, first-time admission rates and hospitalization risk were usually 2- to 4-fold higher in the low educational group compared with the highly educated population. The socioeconomic gradient was steepest for schizophrenia. No gradient was observed for major affective disorders. However, bipolar disorder was most common in the highest educational category. For most conditions, the socioeconomic gradient among women was lower than among men. In Finland hospitalization was more common among low than high socioeconomic groups for most mental disorders and most indicators of inpatient care. Most of these differences are fairly consistent with previous data on socioeconomic gradients in the prevalence of mental disorders.

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Many epidemiological and social psychiatric studies have shown that low socioeconomic status (SES) is associated with a higher risk of mental disorder or poor mental health. Opinions differ regarding the strength of this association for different conditions and symptom scales, as well as the causal pathways (1–4).

For some conditions, such as schizophrenia, the inverse relationship between measures of SES and the illness has usually been strong (5–9). SES differences in affective disorders are less clear, with findings varying from one study to another, depending on populations and diagnostic definitions (4, 8–14).

For most other mental disorders there are fewer studies available to derive a clear impression of the relationship between SES and the disorder. In most studies and for most conditions an inverse relationship between socioeconomic status and morbidity has emerged, but there have been exceptions depending on the population, diagnostic criteria and study design.

Not all patients with mental disorders who need psychiatric care receive it. In a Finnish follow-up study, 93% of the psychotic patients, 75% of the borderlines, 41% of the character disorder group and 29% of the neurotic group had made use of treatment (15). Only a small fraction of mental disorders are observed in psychiatric inpatient care, with the admitted patients usually being the most severely ill.

In this register-based linkage study we first describe socioeconomic differences in psychiatric inpatient care in terms of discharge rates, inpatient days and first-time admissions from the adult population. For this purpose, we included most psychiatric diagnoses and all discharges for two consecutive years in Finland. Secondly, after analyzing utilization patterns and first-time admissions by SES, we discuss these findings in relation to the prevalence and incidence of the most severe forms of mental disorder.

Material and methods

We studied inpatient care by educational level among the adult population of Finland aged 25–64 years (born in 1923–1962). Patient data were derived from

Table 1. Population at risk aged 25-64 years (born 1923-1962), by gender and educational level (%)

Education	Men (n=1 300 141)	Women (n=1 327 438)
Basic	45.7	46.4
Intermediate	42.4	42.2
High	11.9	11.5
Total	*100.0*	*100.0*

the National Hospital Discharge Register, which covers all mental and general hospitals nationwide. About 95% of all hospital discharges are currently reported to the register, which documents the approximately 1 million annual discharges from mental and general hospitals in Finland. It contains the personal identification code and data on age and gender, length of stay, and primary and 3 subsidiary diagnoses at discharge. The diagnoses are coded according to the Finnish version of ICD-9, which has adapted DSM-III-R criteria for mental disorders (16, 17). For psychiatric patients, the register also records whether the patient was admitted to mental hospital for the first time.

In our analysis, we used hospital discharge data from a 2-year period (1987–1988) to generate a large number of observations. The patient population was selected by the primary diagnosis at discharge.

In Finland, the population census contains several indicators of socioeconomic status based on education or occupation. For our study design we

Table 2. Psychiatric hospital use by diagnosis and educational level among men aged 25-64 years. Age-adjusted inpatient days, discharge rates, first-time admissions in Finland and hospitalization risk (per 1000 population) in 1987-1988

Diagnosis (ICD)	Education	BDtotal	Ratio	LOS	Ratio	DR	Ratio	FT	Ratio	HR	Ratio
Schizophrenia (295)	Basic	2065***	15.4	333	3.2	6.2***	4.8	0.35*	2.7	2.9***	4.7
	Intermed	543***	4.1	165	1.6	3.3***	2.5	0.24	1.8	1.5***	2.4
	High	134	1.0	103	1.0	1.3	1.0	0.13	1.0	0.61	1.0
Major affective disorders (296)	Basic	52***	1.1	35	1.0	1.5	1.2	0.38	0.9	0.92	1.1
	Intermed	59***	1.3	45	1.3	1.3	1.0	0.40	0.9	0.86	1.0
	High	46	1.0	35	1.0	1.3	1.0	0.43	1.0	0.86	1.0
Delusional disorders (297)	Basic	19***	1.7	46	0.8	0.41	2.2	0.11	1.4	0.25	2.1
	Intermed	20***	1.8	100	1.7	0.20	1.1	0.09	1.1	0.18	1.5
	High	11	1.0	58	1.0	0.19	1.0	0.08	1.0	0.12	1.0
Other nonorganic psychoses (298)	Basic	45***	4.6	46	2.2	0.97*	2.1	0.31	1.4	0.66*	2.2
	Intermed	36***	3.7	51	2.5	0.70	1.5	0.26	1.2	0.49	1.6
	High	9.7	1.0	21	1.0	0.47	1.0	0.22	1.0	0.30	1.0
Neurotic disorders (300)	Basic	24***	2.2	20	1.3	1.2**	2.0	0.28	2.0	0.81*	1.9
	Intermed	20***	1.8	20	1.3	1.0*	1.7	0.24	1.7	0.69	1.6
	High	11	1.0	18	1.0	0.60	1.0	0.14	1.0	0.43	1.0
Personality disorders (301)	Basic	94***	7.2	52	1.6	1.8***	4.5	0.35**	3.5	1.0***	3.8
	Intermed	34***	2.6	34	1.0	1.0***	2.5	0.23	2.3	0.58*	2.2
	High	13	1.0	33	1.0	0.40	1.0	0.10	1.0	0.26	1.0
Alcohol dependence (303)	Basic	58***	2.5	9.2	0.6	6.3***	3.9	0.37	1.9	3.7***	3.7
	Intermed	40***	1.7	9.3	0.6	4.3***	2.7	0.30	1.6	2.6***	2.6
	High	23	1.0	14	1.0	1.6	1.0	0.19	1.0	1.00	1.0
Drug dependence (304)	Basic	3.0***	3.8	13	0.9	0.24*	4.0	0.04	4.0	0.14	3.5
	Intermed	1.2*	1.5	12	0.9	0.10	1.7	0.03	3.0	0.06	1.5
	High	0.8	1.0	13	1.0	0.06	1.0	0.01	0.1	0.04	1.0
Nondependent abuse of alcohol or drugs (305)	Basic	2.9***	3.6	3.0	1.2	0.97***	3.0	0.03	3.0	0.81***	3.4
	Intermed	1.9***	2.4	2.8	1.1	0.67*	2.1	0.02	2.0	0.55*	2.3
	High	0.8	1.0	2.5	1.0	0.32	1.0	0.01	1.0	0.24	1.0
Adjustment disorder (309)	Basic	8.1***	3.7	17	1.5	0.47*	2.5	0.20	2.2	0.37	2.3
	Intermed	4.3***	2.0	17	1.4	0.26	1.4	0.14	1.6	0.20	1.3
	High	2.2	1.0	12	1.0	0.19	1.0	0.09	1.0	0.16	1.0
Other (302,307)	Basic	0.8**	2.7	5.7	1.1	0.14	2.3	0.01	–	0.12	2.0
	Intermed	0.7*	2.3	7.8	1.6	0.09	1.5	0.00	–	0.08	1.3
	High	0.3	1.0	5.0	1.0	0.06	1.0	0.00	–	0.06	1.0

BDtotal: total bed-days (per 1000); LOS: mean length of stay; DR: discharge rate (per 1000); FT: first-time admissions (per 1000); HR: hospitalization risk at least once in the 2-year period (per 1000). * Significantly different from high education group ($P<0.05$). ** Significantly different from high education group ($P<0.01$). *** Significantly different from high education group ($P<0.001$).

chose educational level or years of education, because morbidity and hospitalization may effect the occupational status of an individual. Educational level is mostly acquired during childhood and adolescence and thus usually precedes adulthood morbidity. In our study the level of education was classified as basic (less than 10 years of education), intermediate (10–12 years) and high (more than 12 years). This socioeconomic data in the census of 1987 was linked with the patient data of 1987–1988 using personal identification codes.

All major mental disorders in the ICD-9 were included in our study (with the exception of psychoorganic syndromes, disorders usually first evident in childhood and adolescence and mental retardation). There were 68,254 discharges in the material. Schizophrenia was the commonest cause of discharge (21,981 discharges), with 1502 first-time admissions. The number of discharges (first-time admissions in parentheses) for the other diagnoses were: major affective disorder 8397 (2293), delusional disorders 1756 (549), other nonorganic psychoses 4617 (1639), neurotic disorders 6203 (1409), personality disorders 5550 (1053), alcohol dependence 14,677 (984), drug dependence 539 (118), nondependent abuse of alcohol or drugs 2433 (70), adjustment disorder 1510 (719) and other diagnoses (ICD-9 codes 302 and 307) 591 (39).

The following indicators of hospital utilization (per 1000 population) were used in the analysis:

1. Total bed-days, all discharges included, per year
2. Bed-days, only hospital stays shorter than 6 months included, per year

Table 3. Psychiatric hospital use by diagnosis and educational level among women aged 25-64 years. Age-adjusted inpatient days, discharge rates, first-time admissions, and hospitalization risk (per 1000 population) in 1987-1988

Diagnosis (ICD)	Education	BDtotal	Ratio	LOS	Ratio	DR	Ratio	FT	Ratio	HR	Ratio
Schizophrenia (295)	Basic	1243**	8.2	218	2.4	5.7***	3.4	0.32	2.0	2.6***	3.1
	Intermed	320***	2.1	94	1.1	3.4***	2.0	0.29	1.8	1.6**	1.9
	High	152	1.0	89	1.0	1.7	1.0	0.16	1.0	0.85	1.0
Major affective disorders (296)	Basic	76***	1.1	40	1.1	1.9	1.0	0.47	0.9	1.2	1.1
	Intermed	66	1.0	39	1.1	1.7	0.9	0.48	0.9	1.1	1.0
	High	68	1.0	36	1.0	1.9	1.0	0.55	1.0	1.1	1.0
Delusional disorders (297)	Basic	15**	1.7	41	1.1	0.37	1.5	0.11	1.4	0.27	1.9
	Intermed	14***	1.6	41	1.1	0.34	1.4	0.11	1.4	0.23	1.6
	High	8.9	1.0	37	1.0	0.24	1.0	0.08	1.0	0.14	1.0
Other nonorganic psychoses (298)	Basic	45***	2.5	41	1.7	1.1	1.4	0.33	0.9	0.76	1.5
	Intermed	28***	1.6	30	1.3	0.93	1.2	0.35	1.0	0.67	1.3
	High	18	1.0	24	1.0	0.76	1.0	0.35	1.0	0.51	1.0
Neurotic disorders (300)	Basic	34***	1.3	20	0.7	1.7**	1.8	0.34	1.4	1.1*	1.8
	Intermed	22***	0.8	20	0.7	1.1	1.2	0.26	1.1	0.76	1.2
	High	27	1.0	29	1.0	0.92	1.0	0.24	1.0	0.61	1.0
Personality disorders (301)	Basic	59***	3.9	39	1.3	1.5***	2.9	0.19	1.6	0.72**	2.4
	Intermed	35***	2.3	45	1.5	0.77	1.5	0.15	1.3	0.43	1.4
	High	15	1.0	29	1.0	0.51	1.0	0.12	1.0	0.30	1.0
Alcohol dependence (303)	Basic	17***	3.5	16	1.1	1.1***	3.3	0.08	2.0	0.73***	3.7
	Intermed	17***	3.5	27	1.8	0.64*	1.9	0.06	1.5	0.41	2.1
	High	4.8	1.0	15	1.0	0.33	1.0	0.04	1.0	0.20	1.0
Drug dependence (304)	Basic	2.4***	3.7	18	1.1	0.13	3.3	0.04	4.0	0.08	2.7
	Intermed	1.4***	2.2	23	1.5	0.06	1.5	0.01	1.0	0.04	1.3
	High	0.64	1.0	16	1.0	0.04	1.0	0.01	1.0	0.03	1.0
Nondependent abuse of alcohol or drugs (305)	Basic	0.61	1.5	2.3	0.6	0.26	2.6	0.00	–	0.21	2.3
	Intermed	0.58	1.4	3.6	0.9	0.16	1.6	0.01	–	0.11	1.2
	High	0.42	1.0	4.2	1.0	0.10	1.0	0.00	–	0.09	1.0
Adjustment disorder (309)	Basic	5.4***	4.5	17	1.7	0.32	2.7	0.14	2.0	0.26	2.4
	Intermed	4.1***	3.4	16	1.6	0.26	2.2	0.14	2.0	0.20	1.8
	High	1.2	1.0	10	1.0	0.12	1.0	0.07	1.0	0.11	1.0
Other (302,307)	Basic	1.5	1.1	10	0.9	0.15	1.3	0.01	1.0	0.09	1.0
	Intermed	1.3	0.9	11	0.9	0.11	0.9	0.01	1.0	0.08	0.9
	High	1.4	1.0	12	1.0	0.12	1.0	0.01	1.0	0.09	1.0

BDtotal: total bed-days (per 1000); LOS: mean length of stay; DR: discharge rate (per 1000); FT: first-time admissions (per 1000); HR: hospitalization risk at least once in the 2-year period (per 1000). * Significantly different from high education group ($P<0.05$). ** Significantly different from high education group ($P<0.01$). *** Significantly different from high education group ($P<0.001$).

3. Bed-days, only hospital stays less than 30 days were included, per year
4. Mean length of stay
5. Discharge rate, per year
6. First-time admission rate, per year
7. Hospitalization risk, i.e., risk of having at least one hospital discharge in the 2-year period 1987–1988

The overall distribution of educational level among the general population is shown in Table 1. Almost half of the study population had acquired the basic level of education only, and gender differences in educational level were very small. All hospital use rates were standardized for age (direct method), using the age distribution (5-year intervals) of the general population as the standard. Socioeconomic differences (high *vs* intermediate or low educational level) were tested by *z*-statistic, comparing differences with the standard error of the difference. The differences were also compared using ratios, with the high education group being assigned the value 1.0.

Results

Hospital use among men is presented in Table 2. The ratios for discharge rate, first-time admission rate and hospitalization risk show that, for most diagnoses, men with basic education had a 2- to 3-fold risk of being admitted to hospital compared with men in the highest educational category. Bed-day ratios demonstrated a similar pattern as other ratios, except for schizophrenia. Most hospital inpatient days in mental hospitals were due to schizophrenia, and the socioeconomic gradient was steepest for schizophrenic patients. In fact, schizophrenic male patients with basic education consumed about 60% of all the bed-days included in our analysis. In contrast to the general pattern, however, no socioeconomic gradient was observed for major affective disorders.

In the basic education group, the average length of stay was longest for schizophrenia and other psychoses and shortest for alcohol dependence, but for most conditions the length of stay was unaffected by the level of education.

Table 3 shows respective socioeconomic patterns of hospital use among women. A clear SES gradient in discharge rates emerged for most conditions, but the SES differences tended to be smaller than among men. Women with basic or intermediate education consumed about 40% fewer bed-days for schizophrenia than the respective male groups. Hospitalizations due to major affective disorders or neurotic disorders were about 30–40% more common among women, and admissions due to alcohol dependence were only a fraction of the male rates. However, women with basic or intermediate education admitted with alcohol dependence had a markedly longer length of stay than men. For most conditions, first-time admissions were equally common among men and women, the only exceptions being lower first-time admission rates among women for nondependent abuse of alcohol or drugs and for personality disorders.

Schizophrenia differs from the other psychiatric conditions in terms of chronicity. In Table 4 the length of stay due to schizophrenia is divided into "short" stays (less than 6 months) and total hospital stays. For "short" stays the difference in bed-days between high and low educational level was about 6-fold, whereas for total bed-days the respective difference was 15-fold. As expected, the comparison of discharge rates produced similar patterns. For total inpatient days, the SES gradient among men was much steeper than among women, but for "short" stays and discharge rates the gender differences were small and the SES gradients similar.

The literature suggests that morbidity by SES in bipolar disorder may differ from that in other affective disorders. Furthermore, the diagnostic labelling of different mood disorders by ICD codes may not be uniform. We therefore subdivided mood disorders into unipolar major depressive disorder (ICD code 2961), bipolar disorder (2962-7) and unspecified depressive disorder (2968), and we also included

Table 4. Psychiatric hospital use among patients in Finland with schizophrenia aged 25-64 years, according to gender, educational level and length of stay. Age-adjusted inpatient days and discharge rates in 1987-1988

	Education	BDtotal	Ratio	BD < 1/2 yr	Ratio	DR	Ratio	DR-LS	Ratio
Men	Basic	2065***	15.4	344***	5.8	6.2***	4.8	0.89***	11.1
	Intermed	543***	4.1	167***	2.8	3.3***	2.5	0.32**	4.0
	High	134	1.0	59	1.0	1.3	1.0	0.08	1.0
Women	Basic	1243***	8.2	300***	4.2	5.7***	3.4	0.67***	11.2
	Intermed	320***	2.1	154***	2.1	3.4***	2.0	0.19	3.2
	High	152	1.0	72	1.0	1.7	1.0	0.06	1.0

BDtotal indicates total bed-days (per 1000); BD < 1/2 year, bed-days (per 1000) for hospital stays shorter than 6 months; DR, discharge rate (per 1000); DR-LS, discharge rate (long stay) for hospital stays longer than 6 months. ** Significantly different from high education group ($P<0.01$). *** Significantly different from high education group ($P<0.001$).

Table 5. Psychiatric hospital use among patients in Finland aged 25-64 years with affective disorders, by gender, diagnosis and educational level in 1987-1988, adjusted for age

Diagnosis (ICD)	Education	No. of discharges	BDtotal	Ratio	LOS	Ratio	DR	Ratio	FT	Ratio	HR	Ratio
Men												
Major depressive	Basic	853	22	1.0	33	0.9	0.66	1.1	0.24	1.0	0.47	1.1
disorder (2961)	Intermed	631	23	1.0	36	1.0	0.64	1.1	0.25	1.0	0.45	1.1
	High	177	22	1.0	37	1.0	0.59	1.0	0.24	1.0	0.42	1.0
Bipolar	Basic	535	24*	1.1	53	1.4	0.45	0.8	0.05	0.4	0.21	0.6
disorder (2962-7)	Intermed	446	30***	1.4	75	2.0	0.4	0.7	0.06	0.5	0.23	0.7
	High	184	21	1.0	38	1.0	0.55	1.0	0.12	1.0	0.33	1.0
Unspecified	Basic	434	6.0***	2.2	17	1.1	0.35	1.9	0.08	1.1	0.28	1.9
depression (2968)	Intermed	296	5.7***	2.1	23	1.5	0.25	1.4	0.09	1.3	0.2	1.3
	High	51	2.7	1.0	15	1.0	0.18	1.0	0.07	1.0	0.15	1.0
Dysthymia (3004)	Basic	597	12***	2.1	24	1.1	0.49	1.9	0.12	3.0	0.35	1.8
	Intermed	462	10***	1.8	23	1.1	0.44	1.7	0.1	2.5	0.32	1.6
	High	79	5.6	1.0	22	1.0	0.26	1.0	0.04	1.0	0.2	1.0
Women												
Major depressive	Basic	1394	44***	1.3	44	1.1	1	1.1	0.33	0.9	0.69	1.3
disorder (2961)	Intermed	745	37	1.1	46	1.2	0.8	0.9	0.32	0.9	0.58	1.1
	High	228	35	1.0	40	1.0	0.88	1.0	0.35	1.0	0.55	1.0
Bipolar	Basic	586	23***	0.8	53	1.5	0.43	0.5	0.05	0.5	0.23	0.6
disorder (2962-7)	Intermed	486	21***	0.7	47	1.3	0.45	0.5	0.06	0.5	0.25	0.6
	High	207	30	1.0	37	1.0	0.82	1.0	0.11	1.0	0.4	1.0
Unspecified	Basic	688	8.4***	2.1	18	1.0	0.47	2.0	0.09	0.9	0.35	1.7
depression (2968)	Intermed	380	8.3***	2.1	22	1.3	0.38	1.7	0.09	0.9	0.31	1.5
	High	64	4	1.0	17	1.0	0.23	1.0	0.1	1.0	0.21	1.0
Dysthymia (3004)	Basic	1009	19***	2.4	27	1.3	0.7	1.9	0.14	1.8	0.5	2.0
	Intermed	480	12***	1.5	22	1.1	0.54	1.5	0.11	1.4	0.36	1.4
	High	96	7.8	1.0	21	1.0	0.37	1.0	0.08	1.0	0.25	1.0

BDtotal: total bed-days (per 1000); LOS: mean length of stay; DR: discharge rate (per 1000); FT: first-time admissions (per 1000); HR: hospitalization risk at least once in the 2-year period (per 1000). * Significantly different for high education group ($P<0.05$). *** Significantly different from high education group ($P<0.001$).

neurotic depression (dysthymia) (3004) in the analyses. Hospital use for these conditions by gender and educational level is shown in Table 5. Women had higher utilization for major depressive disorder, unspecified depression and dysthymia, whereas gender differences in bipolar disorder were negligible. SES gradients showed very different patterns, depending on the condition. For bipolar disorder, the discharge rates, first-time admission rates and hospitalization risk were highest in the upper education group. Hospital utilization for major depressive disorder was very similar in all education groups, but for dysthymia and unspecified depression the low education group used hospital more than the rest of the population.

Discussion

Our aim was to form a fairly comprehensive overview of psychiatric inpatient care. Because different measures of hospital use depict separate aspects of hospital care and some measures may be interdependent, we analyzed several indicators simultaneously. Moreover, doctors may differ in their diagnoses and similar conditions may be labeled differently. Preferences in labeling may also occur in relation to the socioeconomic status of the patient. For example, a diagnosis of schizophrenia may be regarded as stigmatizing and as such to be avoided. Or in a borderline case, neurosis might be preferred to psychosis as the diagnosis at discharge. For these reasons, we included most psychiatric diagnoses in our study.

Psychiatric hospital use constitutes but a small proportion of all psychiatric care and patterns of use are only indirectly associated with morbidity. The hospitalization risk is obviously related to the mental disorder and its severity, but also to the access to and availability of inpatient and outpatient services. We studied only hospital patients who had been discharged, thereby ignoring all ambulatory patients and those patients not receiving any care. Unfortunately, there were no similar psychiatric case registers or other data on ambulatory care available to obtain a more comprehensive view of SES patterns in psychiatric care. Long-term patients may be slightly overrepresented in our material because of active deinstitutionalization in the 1980s in Finland.

This should not bias the findings on socioeconomic differences, however. We assume that access to basic psychiatric services in Finland is not substantially influenced by income. By the early 1980s, the public sector community mental health centers had extended their coverage over the entire country, and these services continue to be provided free of charge. There were 57 mental hospital and 14231 mental hospital beds (2.9 beds per 1000 inhabitants) in Finland in 1988. All mental hospitals in Finland are run by federations of municipalities, and patients pay a nominal fee (FIM 60 ($\sim$USD 11) per day in 1988) for short-stay hospitalizations. If even this low fee might impose financial burden, the patient is eligible for welfare benefits. There are no major regional inequities in the supply of psychiatric beds. A small proportion of psychiatric patients are treated in general hospitals, and these cases were included in our study. Major cities have private outpatient psychiatric services, but their contribution to the total psychiatric outpatient care is fairly limited, at about 10%. There is some evidence that place of residence is not significantly related to treatment received in Finland (18). The same study estimated that 71% of patients in need of psychiatric care had received it.

Use of a nationwide database of discharged patients and linkage of the discharge register to the census guaranteed identical classification of educational level in the nominator data (patients) and denominator data (population). Moreover, the accuracy of the hospital discharge register compared with medical records is excellent for most of the recorded items. For example, the diagnostic data (ICD-9, 3-digit code) are identical with the medical records for about 95% of primary diagnoses, and this high accuracy extends to psychiatric diagnoses, too (19). We do not have data on the reliability of "first-time admission" in the discharge register. For each patient, data are collected on the number of admissions for psychiatric care (first, second or ≥ 3 admissions). Missing data in this item was only 0.5%. It is possible that patients who have been admitted to several hospitals may be mistakenly coded as "first-time admission" more than once. Patients are usually readmitted to the same hospital, unless they have moved to another municipality or hospital district. Inaccuracies in coding first-time admissions should not affect our findings of socioeconomic gradients.

For most conditions studied and for most indicators, the socioeconomic gradient in hospital use was obvious. The strongest association between educational level and hospital use was seen among schizophrenic patients. In the population with basic education, inpatient days, discharges, length of stay and first-time admission rates were 2–15 times greater than in the higher education group. Among schizophrenic men, this association was even stronger. These findings are consistent with many epidemiological and social psychiatric studies, which have repeatedly shown that low SES is associated with a higher risk of schizophrenia (5–9), either because social factors may under certain circumstances have a negative impact or be related to factors that "cause" the illness or because the illness has "caused" or at least preceded the downward drift in SES. A recent Finnish study showed that first contacts for schizophrenia may occur at a fairly young age (20). Thus, schizophrenia may severely affect the attainment of education (21).

The socioeconomic patterns of hospital use for major affective disorders were different from other patterns. The high education group had elevated hospital use for bipolar disorder. Hospital use for major depressive disorder was independent of SES, whereas for unspecified depression and dysthymia it was more common in the population with low education. These findings are consistent with many earlier studies (12, 13, 22–24).

Except for bipolar disorder, female discharge rates and first-time admission rates for mood disorders were about 25–35% higher than the respective rates among men. Similar gender differences both in morbidity and in probability of receiving treatment have been reported in many earlier studies (4, 8, 18, 22, 25–29). In this study of hospitalized patients we observed a SES gradient for neurotic disorders. Hospitalization due to these disorders is certainly rare in comparison with its occurrence in the general population. Therefore, any comparisons between hospitalization rates and morbidity or symptoms suggesting neurosis should be made with great caution. A Finnish health interview survey among the adult general population showed that symptoms of depression and anxiety were more common in groups of low SES (30), and a recent epidemiological study from the United States found a strong association between anxiety disorders and low SES (4).

The SES gradients in discharge rates for schizophrenia and personality disorders were steeper among men. Other than that, the gender differences in discharge rates by SES were fairly small. Male discharge rates due to alcohol dependence were 5–6 times higher. This is consistent with marked gender differences in drinking habits in Finland.

The dynamics of admission and discharge by SES and other factors have not been studied in detail. More highly educated patients are usually better informed about the services, and they may make more effort to use outpatient psychiatric facilities. If this is the case, one would expect patients with higher education to be more severely ill at admission to hospital and thus require longer hospital stays. For similar reasons one could assume that clinical condition at discharge is also worse. For most psychi-

atric diagnoses the length of stay was fairly similar, with notable exceptions. The less highly educated patients with schizophrenia and "other psychosis" had 2–3 times longer hospital stays, whereas alcohol dependence caused longer hospital stays among the highly educated. It is possible that the threshold for hospitalization and/or diagnosis for alcohol dependence among the more highly educated group is higher, leading to that group representing more severe cases.

Factors other than the severity of illness may affect both hospital admission and discharge. For example, social support provided by family and friends, living conditions and occupational duties vary between socioeconomic groups. Some studies have shown that the nature and severity of a patient's problem played the most important role in the decision to hospitalize, whereas sociodemographic variables did not predict hospitalization (31–33).

In Finland, schizophrenic patients with an acute episode are usually admitted to hospital for at least a brief period of time, despite increasing emphasis on ambulatory care (34). Therefore, the first-time admission rate might provide a fair estimate for schizophrenia. We have some indirect data for estimating the relationship of first-time admission to population-based incidence. A recent study in one region of Finland estimated that the crude incidence of ICD-8 schizophrenia among men aged 15–59 was 0.23 (per 1000) and among women 0.21 (per 1000) (20). We did not estimate first-time admission rates for this particular age range and region, but the national crude rates in the 25- to 64-year age group in our study were of the same magnitude: 0.29 (per 1000) for men and 0.28 (per 1000) for women. For most other mental disorders, comparison between population-based incidence and hospital-incidence would be irrelevant, because only a small proportion of these patients would be admitted to hospital.

Assuming that first-time admission rates are fairly valid indicators of severe mental disorder and that the observed SES gradients are proxies for the gradient for these conditions in the population, it seems obvious that less educated people had a higher risk for most mental disorders. These findings are, by and large, consistent with a recent study on psychiatric morbidity in the Finnish population, where neurotic disorders, personality disorders and psychoses were clearly more common in lower than higher SES groups (35).

The notable exception to the general pattern in our study was major affective disorders, where no gradient was observed, mainly because the high education group had the highest level of admission due to bipolar disorder, a subcategory of major affective disorders.

Conclusion

For most conditions we observed a strong inverse relationship between SES and various indicators of hospital use. Our findings are fairly consistent with SES differentials in the prevalence of mental disorders. Our cross-sectional data cannot address the causation-selection issue of SES and mental morbidity. This has recently been investigated for some conditions using a unique study design, the findings suggesting that social selection may be more important for schizophrenia, whereas social causation may be more important for depression in women and for antisocial personality and substance use disorders in men (3).

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