

The Evaluation of Mental Health Care Systems

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While the demand for deinstitutionalisation, strongly supported by the economic aspect of the issue, has resulted in a steep decline in the number of psychiatric beds in many Western countries, the evaluation of extramural psychiatric care has several difficulties, including that of proving effectiveness without experimental control of confounding influences. For a cohort of schizophrenic patients we investigated the impact of out-patient psychiatric treatment on length of stay in hospital and length of stay in the community. Out-patient care had a significant influence on readmission, but no effect on the length of in-patient treatment. While the average cost of community care was less than half that of traditional hospital care, in 6% of the patients this threshold value of continued in-patient care was exceeded. There also seems to be a non-monetary threshold, above which community care is no longer appropriate.

Apart for a few isolated hospitals such as Casa de Orates in Valencia, founded in 1409, institutional mental health care began in the 18th and 19th centuries. The aim was to provide better accommodation and care for the incurably mentally ill than the medieval prisons, workhouses, and impoverished relatives were able to offer. Subsequently long-stay patients and bed occupancy in mental hospitals increased continuously in industrialised societies. Although pre-eminent psychiatrists such as Griesinger (1845) in Germany warned of its disastrous consequences, the idealistic model of a remote mental hospital (to rescue the mentally ill from the allegedly pathogenic environment) became the archetype of a large number of mental hospitals in Europe.

The expansion of custodial mental health care and the accumulation of psychiatric beds peaked in the middle of this century. In 1955 the number of occupied beds in psychiatric hospitals stood at about 350 per 100 000 population in Great Britain and at about 450 per 100 000 in the USA. Thereafter the rates declined steeply to about 155 per 100 000 in England and Wales on a census day in 1981 (Department of Health and Social Security, 1980; British Psychiatric Register Group, 1984) and 96 per 100 000 in the USA in 1983 (National Institute of Mental Health, 1987).

The three main reasons for the new trend in the system of mental health care – ‘deinstitutionalisation’ – are: (a) the scandalous neglect of mental hospitals; (b) the transition of psychiatry to a primarily therapeutic discipline; and (c) the *Zeitgeist* stressing civil rights and demanding an optimum of freedom and quality of life for the chronically ill and disabled. The demand for deinstitutionalisation has been intensified by the economic aspect of the issue. In

the USA over \$30 billion was spent on psychiatric services in 1980 (Talbot, 1985). Almost 25% of all the days spent in hospital were accounted for by mental patients, and 70% of the funds allocated to mental health care were spent on in-patient care (Mosher, 1983).

The deinstitutionalisation movement, however, failed to see the risks of discharging chronic patients with social disabilities to the community, where their families could not provide them with adequate support or where there was insufficient alternative residential care.

Evaluating the success of deinstitutionalisation is controversial (Gralnick, 1985; Okin, 1985), as is the extent to which extramural care should be expanded and to what extent in-patient care is still needed. In this far-reaching transition to new patterns of mental health care, monitoring outcome and evaluating of the effectiveness of alternative strategies are of crucial importance.

Monitoring changes in a mental health care system

Although aggregate data do not distinguish multiple utilisations of services by individual patients, they can be used for monitoring the utilisation of mental health care systems (National Institute of Mental Health, 1986, 1987) and for global cost analyses. The almost tenfold increase in episodes of out-patient care that took place in the USA between 1955 and 1975, as well as a slight fall in the overall utilisation of mental health services since 1975, reflect the enormous changes in the national system of mental health care (Redick *et al.*, 1985).

Nationwide out-patient data on specialist services are available in only a few countries, and hardly any nationwide data exist on the utilisation of primary health care, a fact that is in contrast with the importance of this sector for the mentally ill. A cross-sectional study conducted in the state of Bayern, West Germany (population nine million), showed that in 1983 almost half of the members of the largest health insurance scheme in West Germany who were admitted to in-patient care for mental disorders were cared for in non-psychiatric units, primarily those specialising in internal medicine (Hospital Management, 1985). The quality of care provided by non-psychiatric health services is not usually considered when evaluating mental health care systems.

The contributions of case registers to service research (Wing & Fryers, 1976; British Psychiatric Register Group, 1984; ten Horn *et al*, 1986) are most valuable at the local level, where their catchment areas are identical with those of community mental health services. In a comparative description of data from eight British case registers covering 1976–81 (British Psychiatric Register Group, 1984), the admission rates of people over 64 years increased by 6% to 41% in the catchment areas of six out of eight registers. With one exception the proportion of short-stay patients (one-year maximum) rose in all register areas, whereas ‘very-long-stay’ patients (over five years) decreased almost everywhere. Four out of six registers that recorded the contacts with psychiatric out-patient clinics for the whole period of observation reported an increase in utilisation rates of between 7.6% and 21.3%.

Evaluating the effectiveness of mental health care

A descriptive evaluation of mental health care should detail service utilisation and service provision by certain standards or through comparative data. Output evaluation (Suchman, 1967) aims at proving the effectiveness of mental health services or programmes, but whereas the efficacy of antipsychotic medication in the treatment of schizophrenic patients seems well established (Leff & Wing, 1971; Hirsch *et al*, 1973; Hogarty & Goldberg, 1973), the mode of action of facilities or subsystems of care is far less certain.

Most studies on the effectiveness of extramural health care for chronic mental patients are based on “synthesized community support systems” (Bachrach, 1982) – “interventions planned to test hypotheses, to elaborate on the conditions under which selected variables have specific outcomes”, as opposed to “organic community support systems” – the “answers to a community’s perceived needs,”

reflecting the problems and conditions of the community in which they are found. While the former often serve their purpose effectively (e.g. Davis *et al*, 1972; Stein *et al*, 1975), they may not substitute the analysis of ‘organic’ care systems. The latter, however, often fail to describe the actual care provided in a reproducible way or to analyse it with regard to its main components; neither have the patient samples been defined precisely enough with regard to diagnosis, degree of severity, or chronicity in most of the studies. These shortcomings explain why studies evaluating the effectiveness of ‘organic’ extramural psychiatric care are often contradictory with respect to their effects on outcome (an der Heiden *et al*, 1989).

In order to arrive at realistic and more generalisable results, the following criteria must be heeded: (a) interventions subject to evaluation must be described precisely; (b) the patient population studied should be homogeneous with respect to the relevance of the therapeutic interventions and the outcome variables; and (c) there should be a clear definition of the therapeutic objectives. As one objective is to substitute in-patient treatment by extramural care, possible outcome criteria may be number of readmissions and days spent in hospitals, or length of stay in the community. In order to assure that a lack of readmissions means more efficient, successful treatment, one has also to control for illness-related measures as symptoms, social competence and independence, and burden on the patient’s family or the community and life satisfaction.

A classic way of controlling variables confounding the relationship between intervention and outcome is a random assignment of patients to certain treatment conditions (a model programme of extramural mental health care) and control conditions (the traditional care provided in the area where the study is conducted, or continued hospital care). However, the classic experimental criteria, such as manipulation and variation of independent variables, control of intervening variables, and replicability, frequently cannot be fulfilled in evaluative studies. One of the main reasons is ethical objections to a strictly random assignment of patients.

In a critical evaluation of 18 studies, Braun *et al* (1981) found that the internal and external validity of the results in the majority of the studies reviewed had to be questioned because of shortcomings in study design or assignment of patients. The authors concluded that the superiority of alternative programmes to the traditional forms of mental health care could not be proven in any of the studies referred to. The model programmes, on which most of the studies were based, frequently failed to specify

whether the reported decreases in readmissions resulted from an improvement in the patient's status, or from an increased tolerance in the patient's environment created by the model programme. The fact that in many experimental studies the positive effects disappeared after a short time (Langsley *et al*, 1971; Davis *et al*, 1972; Mosher & Menn, 1978; Test & Stein, 1978) could also be explained by the 'Hawthorne effect', that is, the effect of motivation by a new approach which cannot be preserved in the long run (Mechanic, 1978; Bachrach, 1980).

Because of the impracticability of a random assignment, one has to look for alternative strategies to control for intervening variables. To rule out alternative interpretations of empirical data in a naturalistic design, intervening variables can be controlled only on the basis of a theoretical model, taking into account the supposed interactions. One precondition is that most relevant variables are known.

We investigated the effect of one particular component of the extramural care provided for schizophrenic patients - out-patient psychiatric care - on the time spent outside hospital and the length of stay after readmission.

Experimental

The cohort included all patients from the Mannheim population who were successively admitted to hospital during one year (1977-78) with the diagnosis of schizophrenia. The cohort of 148 schizophrenics was interviewed at intervals of six months, during a study period of 18 months, to obtain information on symptoms and use of extramural services.

In line with the model of analysis (Fig. 1), symptoms when entering the study, length of in-patient care received up to that time, and living conditions (living in a psychiatric home, with relatives, or alone) were used as intervening variables. The effects of these intervening variables on the

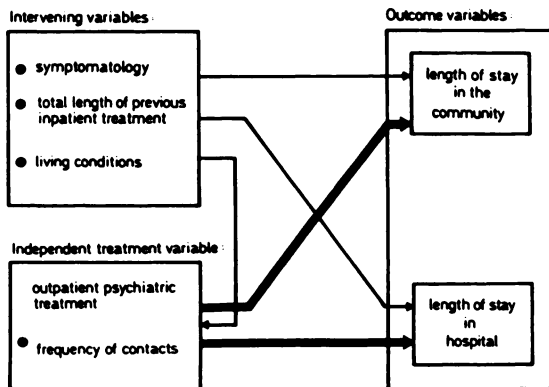


FIG. 1 Model of analysis.

observed values of the independent and dependent variables were computed by regression analysis and partialled out.

Figure 2 shows the results of a survival analysis (Kalbfleisch & Prentice, 1980) for the interval between discharge from hospital to readmission, or to the end of the study period, for different frequencies of out-patient psychiatric contacts. As values for the independent variable, we chose the first, fifth and ninth decile of the distribution. The graph in Fig. 2 shows a highly significant ($P < 0.01$) influence of out-patient psychiatric treatment on the probability of readmission. For example, the difference between the median survival time of the first decile (low frequency of out-patient contacts) and the fifth decile (medium frequency) is over 160 days.

An examination of the effect of out-patient care on the dependent variable 'length of in-patient treatment' (Fig. 3) revealed no difference between the three groups. This means that out-patient mental health care does not exert any influence on the length of in-patient treatment at

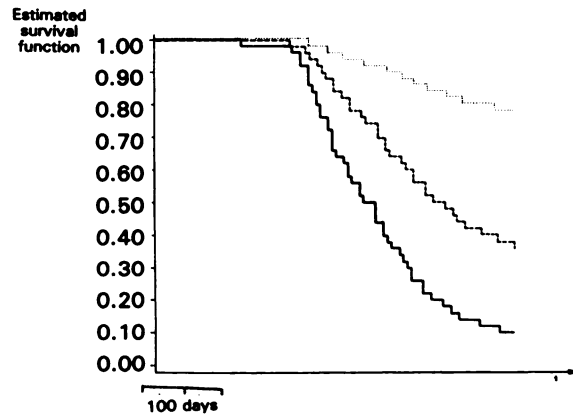


FIG. 2 Survival analysis: the effect of 'frequency of out-patient psychiatric contacts' (— low frequency, --- medium, high) on length of stay in the community.

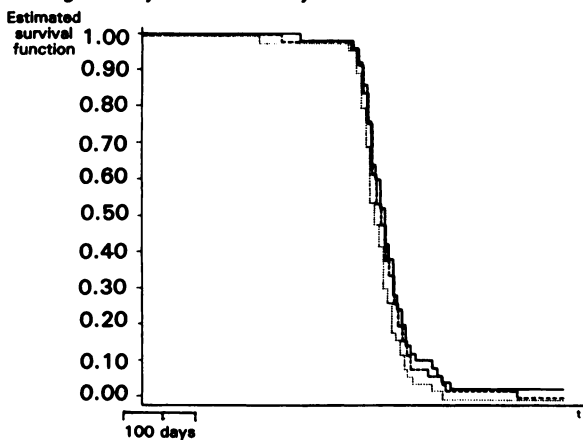


FIG. 3 Survival analysis: the impact of 'frequency of out-patient psychiatric contacts' (— low frequency, --- medium, high) on length of stay in hospital.

readmission: length of hospital stay is probably influenced more by the course of symptoms at relapse and by hospital variables.

We then studied the effect of extramural medical care on total need for in-patient treatment and on symptoms. The study period of 18 months was divided into 12 and 6 months. Using a similar model as described above to partial out intervening influences (see Fig. 1), a significant negative correlation between the frequency of out-patient contacts in the first 12 months and total length of in-patient treatment in the subsequent six months emerged ($r = -0.32$, $P < 0.001$). In the same way, we also studied the effects of out-patient care on the disease variables. Again, we found significant negative correlations with symptoms and disease-related behaviour, measured by BSO (behaviour, speech, and other disorders) and DAH (delusions and hallucinations), the syndrome indices of the Present State Examination (PSE; Wing *et al.*, 1974).

In order to assess the differential effects of the patient's setting in the community on the impact of out-patient psychiatric treatment, we subdivided the cohort into three groups according to living conditions (Table I). For patients living in sheltered accommodation, we found that more psychiatric out-patient treatment resulted in a decrease both in in-patient treatment and in the two syndrome scores. Looking only at the disease-related measures, for patients living with their families, the correlation was much smaller, whereas for patients living alone no significant effect could be found. We assume that the indirect effect of living conditions on the effectiveness of out-patient care had something to do with a better compliance with prescriptions in a better-supervised setting, as all psychiatric homes in Mannheim are visited at least once a month by a psychiatrist or a social worker.

TABLE I
Effect of out-patient psychiatric treatment on length of stay in hospital and symptoms¹

	Months 1-12	Months 13-18	
	In-patient treatment ²	PSE subscore DAH ³	BSO ³
Living alone ($n = 32$) ⁴	-0.31*	0.00	-0.01
Living in family ($n = 68$) ⁴	-0.29**	-0.14*	-0.08
Living in sheltered accommodation ($n = 25$) ⁴	-0.40**	-0.35*	-0.27*

1. Pearson correlations after removing the effects of 'symptoms' and 'chronicity of illness' by regression analysis; sample broken down by living conditions.

2. No. of intervals.

3. Total score.

4. Only patients with complete information.

* $P < 0.05$, ** $P < 0.01$.

Cost aspects as indicators of the functioning of the extramural mental health care system

The study of the costs of mental health care, especially the comparison of extramural psychiatric care with the traditional hospital care of chronic mental patients, is of importance for administrative decisions and for evaluating certain forms of care. The quantified utilisation data of our cohort of 148 patients was the basis for a case-related calculation of the costs of treatment. They consist of the direct costs of full and partial hospital care, out-patient medical care, daily rates for psychiatric homes, and rehabilitation units etc. based on 1980 prices. When we compared the mean costs of comprehensive community care per case in our cohort (including the costs of hospital readmissions) with those of continued hospital care of the same length, community care cost less than half as much as traditional care (Fig. 4).

However, when the costs of complementary care for individual cases were looked at, distributed over the total number of cases, a steeply rising trend emerged, which finally exceeded the threshold value represented by the costs of continued in-patient care. In eight cases (6% of the cohort) the cost of complementary care was higher than that of traditional hospital care.

The results of our comparison of average costs are valid only under the condition that 40% of all schizophrenic long-stay (over one year) patients are admitted (Häfner & an der Heiden, 1983). Of all schizophrenic patients in Mannheim needing long-term care of more than one year in 1980, about three-quarters were admitted to sheltered accommodation, and only a quarter to a mental hospital. Community mental health care, as compared with continued hospital care, becomes considerably cheaper if severely ill and disabled patients needing particularly intensive care are not discharged from hospital. The

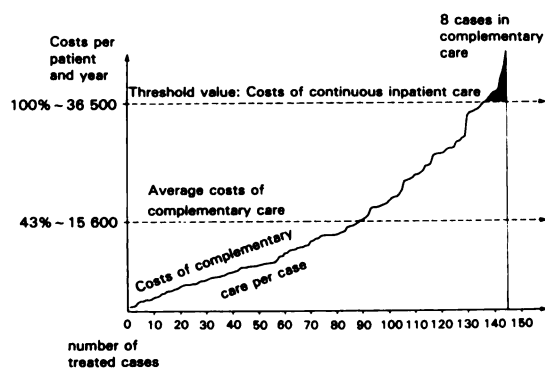


Fig. 4 Direct costs of community care (based on 1980 prices).

steep increase in cost per case indicates that with increasing needs for care, which are probably accounted for by severe mental disorder, the monetary costs (and probably also the non-monetary costs, i.e. the burden to the patients themselves, their families, and the community services) exceed the costs of hospital care. Thus there is not only a monetary, but also a non-monetary threshold value, above which community care seems to be no longer appropriate. Beyond this threshold it is not only cheaper, but probably also more humane to place chronically ill patients requiring long-term in-patient care in mental hospitals providing 24-hour medical and nursing care, good accommodation, occupation, and leisure-time activities, as well as rehabilitation units.

The distribution of costs per case shows that in patient groups with supposedly similar needs, the intensity of institutionalised care needed varies considerably (Mechanic, 1987). In the transition from a hospital-centred to a community-centred mental health care system, milder cases are probably discharged first, but with a growing proportion of chronic patients discharged from hospital into the community, the number of more severely disordered out-patients increases, and as service use in out-patient psychiatric care is directly related to the measure of need (Goldman & Taube, 1988), the cost per case increases. In-patient care will also change. The proportion of long-stay patients needing less intensive care and nursing will decline. The small proportion of new long-stay in-patients will require more intensive care. In fact, all patients in need of in-patient care, in spite of the availability of a dense network of complementary services, will require more intensive care, as many of them will not be readmitted until their episode of illness is sufficiently severe (Hoult, 1986). This means that both the psychiatric unit serving acutely ill mental patients and the mental hospital ward serving chronic patients have to provide more intensive care and a better standard of service than did the traditional mental health care system. The results of a comparative evaluation of the effectiveness and costs of the two components of the system depend on how far this process has advanced, and how many severely ill discharged chronic patients need intensive community care. This has been neglected in several studies.

Conclusion

Such far-reaching, rapid changes as the system of mental health care is currently undergoing are associated with high risks. They should not be allowed to result from an uncontrolled manipulation

on purely political or economic grounds. A descriptive monitoring of mental health care by means of nationwide health statistics, and the evaluation of the effectiveness of whole packages or individual components of new forms of care and their costs, is presently needed in psychiatry more urgently than in any other sector of public health. It should be remembered that changes in one sector, such as the expansion of extramural care, will produce changes in other sectors, such as hospital care.

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