Integrated hospital and community psychiatric services and use of inpatient beds

Peter Tyrer, Richard Turner, A L Johnson

Abstract

The impact of introducing a divisional psychiatric service based in the community in Nottingham in 1981 on adult psychiatric admissions (patients aged 15-65) was examined with data from the Nottingham case register. During 1980-5 the number of psychiatric admissions fell significantly (4·5% a year) compared with the national figures (0·46% a year). Admissions were reduced most for the diagnoses of affective psychosis and neurotic and personality disorders. The average duration of admission fell by 3·6% a year, and use of inpatient beds fell by 37·5%.

Integrating hospital and community psychiatric services by creating sectors is a viable and economically feasible way of improving psychiatric services.

Introduction

There is considerable conflict about the best way of delivering psychiatric services, and this often dominates all other issues. Despite this there is basic agreement about aims: to provide a comprehensive range of psychiatric services in a setting that least disrupts the patient's life and yet gives adequate protection to both the patient and society. Ideally, therefore, patients should be treated as near as possible to their home and given hospital treatment only after community treatment has failed.

Unfortunately, much of the debate about community psychiatry has been side tracked into less productive arguments about peripheral issues. Many of these are concerned with the economics of health care with the suspicion that mental hospitals are being closed at a faster rate than appropriate because of political[1] or economic[2] pressures rather than clinical considerations. In many areas moves towards community psychiatry have been stopped because insufficient funds are available.

In Nottingham we have adopted an approach that integrates hospital and community psychiatric services and allows savings made on hospital care to be transferred to community care with little difficulty. One of the main problems in establishing community psychiatric services in other areas is the demand that the resources should be available before the numbers of psychiatric beds are reduced. There is no reason, however, why these should not be simultaneous. We describe the impact on the use of hospital psychiatric beds of introducing a community oriented psychiatric service on a system based on sectors during 1980-5.

Methods

The Nottingham conurbation has a population of about 400 000 and covers a compact area of about 65 km^2. It has long been noted for experiments in community psychiatric care.[3] In September 1981 the psychiatric services were divided into four sectors of equal psychiatric morbidity, which were conterminous with the boundaries of the social service areas in Nottingham. This served as a stimulus to develop local services. Each sector included two consultant psychiatrists, junior staff, social workers, and community psychiatric nurses. To help community development an extra £85 000 was allocated to each sector for recruiting additional staff (mainly community psychiatric nurses). Two of the four sectors were able to respond immediately to these new developments, one because it had already established close liaison with general practitioners in clinics at health centres[4,5] and the second through collaboration with the social services department with the development of initial joint assessment of patients in their own homes.[6] Soon afterwards there were similar developments in the rest of the city. Using data from the Nottingham psychiatric case register, which collects details of all contacts with psychiatric patients, we examined the impact of introducing the new services on the use of hospital beds.

All admissions to the adult mental health services (patients aged 15-65) during 1976-85 were collected from the Nottingham psychiatric case register. From 1980, the year before the service was based on sectors, they were separated into sector of residence, duration of admission, diagnosis on discharge, and whether they were first admissions or readmissions. The annual mean number of beds occupied during 1980-5 was also calculated for the sector of residence. The data in Nottingham were compared with the equivalent national data.

Results

Admissions to psychiatric hospitals in England fell in the 1970s but remained stable at about 424/100 000 from 1978. In Nottingham rates of admission were constant at 406/100 000 up to 1980 but were reduced during 1980-5 with most of the reduction occurring in the three years immediately after the service was based on sectors. The fall in admission rate was significantly greater than that in England as a whole over the same period ($\chi^2=26·0$, df=1, $p<0·001$) (fig 1). Under a logistic regression model (with a linear term for calendar year, an indicator for the population, and their interaction) the risk of admission fell by 0·46% (95% confidence interval 0·33 to 0·59) a year in England and by 4·5% (2·9 to 6·0) a year in Nottingham.

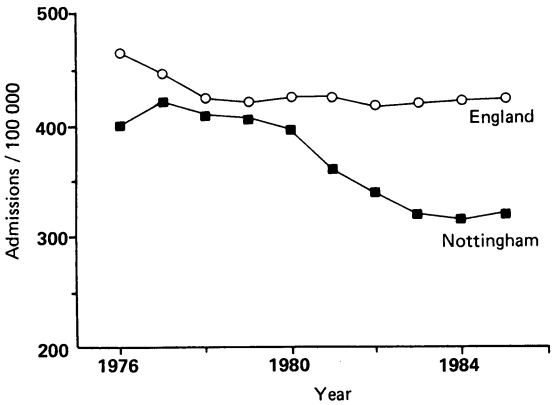

FIG 1—*Admission rates per 100 000 population to mental hospitals in Nottingham and England for patients aged 15-65*

St Charles's Hospital, London W10 6DZ
Peter Tyrer, FRCPSYCH, *senior lecturer*

Queen's Medical Centre, Nottingham
Richard Turner, MRCPSYCH, *consultant psychiatrist*

Medical Research Council Biostatistics Unit, Cambridge
A L Johnson, PHD, *statistician*

Correspondence to: Dr Tyrer.

Br Med J 1989;**299**:298-300

Diagnoses were grouped into six categories: organic disorders, schizophrenia, affective psychosis, neurosis and personality disorder, alcohol and drug addiction, and other diagnoses (such as other delusional disorders, anorexia nervosa, adjustment disorders, no psychiatric diagnosis). Over the six years from 1980 there were significant differences in admission rates between the diagnostic groups for both first admissions (linear regression model for logarithmic admissions on year (comparison of slopes)/F=4·6, df=5,24, p=0·005) and all admissions (F=3·38, df=5,24, p=0·019). Diagnoses of neurotic and personality disorders and affective psychoses fell significantly (table I, fig 2) and admissions for other diagnoses significantly increased. The number of patients admitted with schizophrenic illness remained virtually static over this period.

TABLE I—*Annual percentage change* (95% confidence intervals) in admissions of patients aged 15-65 in Nottingham according to psychiatric disorder*

Diagnostic group	First admission	All admissions
Organic disorder	−2·6 (−7·3 to 2·4)	−1·1 (−8·0 to 5·4)
Schizophrenia	−0·6 (−2·8 to 1·8)	−0·7 (−3·6 to 2·3)
Affective psychosis	−4·2 (−10·5 to 2·6)	−3·4 (−6·3 to −0·5)
Neurotic and personality disorders	−4·9 (−8·1 to 1·5)	−3·3 (−5·1 to −1·5)
Alcoholism and drug addiction	0·7 (−3·3 to 4·8)	−2·0 (−4·1 to 0·1)
Other diagnoses	4·5 (0·2 to 9·0)	3·5 (0·3 to 6·9)

*Estimated from linear regression model of logarithmic admissions on year (1980-5).

TABLE II—*Average number of beds used daily for patients aged 15-65 in mental hospitals in Nottingham and rest of England*

Year	Nottingham	Rest of England*
1980	216	34 417
1981	199	32 994
1982	168	31 716
1983	156	30 252
1984	145	28 543
1985	135	27 645

*Figures based on SBH 112 returns and mental health inquiry for resident patients and average daily occupancy figures from SH3. Reproduced with permission of Department of Health and Social Security.

The number of beds used by a service depends on both the number of admissions and their duration. With the introduction of the new services the mean duration of admission fell by 21·5% during 1980-4. The combination of a reduced number of admissions of shorter duration meant that considerably fewer psychiatric beds were needed, and this was reflected in the mean bed occupancy (table II). The reduction in Nottingham was 37·5% (34·2 to 40·8%) compared with 24·2% (23·7 to 24·7%) in England. These figures also reflect the establishment of a comprehensive rehabilitation service in 1980, which led to the discharge of more long stay patients.

Discussion

Our data suggest that improving community psychiatric resources can lead to a corresponding reduction in the use of hospital beds by reducing both the numbers and duration of admissions. The reduction in admissions was greater than that achieved nationally, and, though there could be several reasons for this, we conclude that the community developments based on sectors were primarily responsible.

The reductions in bed use were not forced on the hospitals through unwanted closures, and as Nottingham has no other relevant psychiatric facilities, public or private, the patients were not being treated elsewhere. During the six years of the inquiry each psychiatric sector developed its own community base, and as this was gradual with close integration between the services the health authority did not have to provide a large injection of capital. The integration of hospital and community services means that each sector team is responsible for all parts of the service in its area and can decide where resources should best be placed. The "either/or" arguments that have dogged discussion about community psychiatry do not apply. For example, in the Department of Health and Social Security's document *Better Services for the Mentally Ill* (1975) it was stated that the aim for each mental hospital was to provide "a full range of facilities throughout its catchment area that has shown itself capable of providing for newly arising patients a comprehensive service independent of the mental hospital."[7] This admirable aim may never be possible; hospital beds will always be needed and whether they are provided at a district general hospital or in a mental hospital is fairly unimportant. What is more important is for services to be well integrated and contiguous so that good continuity of care is maintained and unnecessary barriers cannot develop between community and psychiatric services.[8]

Although the recently published Griffiths report recognised the importance of locally based community services,[9] local authorities are unfortunately expected to fund these independently of health services, and whether the funding will be available or used wisely is doubtful.[10] Our findings suggest that this division of hospital and community care is artificial. One of the criticisms of community mental health facilities in the United States is that they have had little impact on state psychiatric hospitals because they deal with a different population of patients with less severe mental illness.[11] Our findings suggest that patients seen in community psychiatric practice, whether at home, in outpatient departments, or in general practice psychiatric clinics, are patients with important psychiatric illness who might normally be considered for admission if they were not treated outside hospital. Although the trends shown by the survey are encouraging and are supported by similar findings from other parts of the United Kingdom[12] and from Verona, Italy,[13] they should not lead to the conclusion that community services may

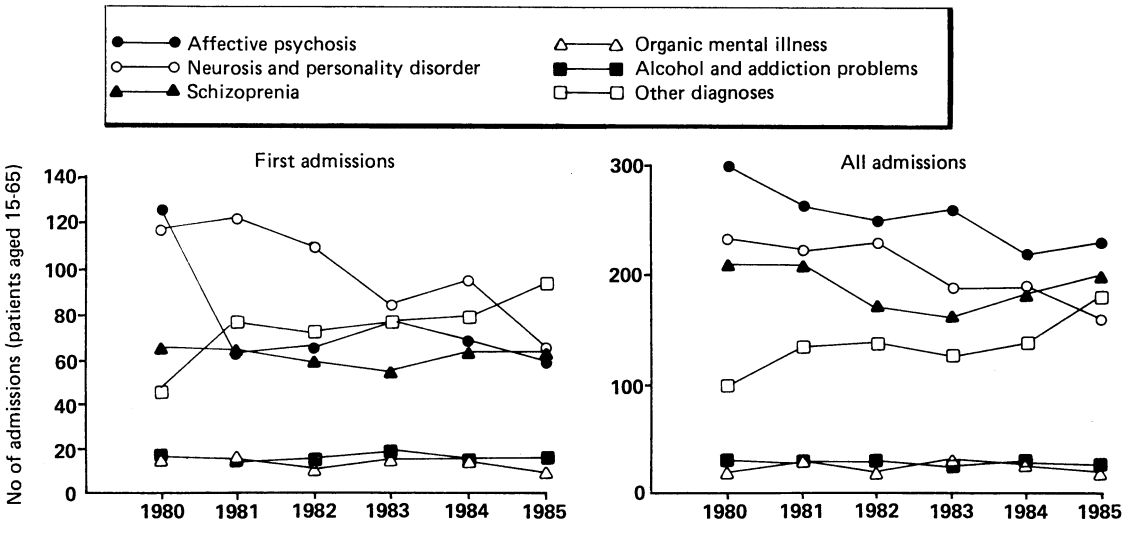

FIG 2—*Changes in psychiatric admissions by diagnosis in Nottingham during 1980-5*

dispense with inpatient beds altogether. Even when intensive care is given by enthusiastic and committed staff with residential care facilities outside hospital psychiatric admissions will always be needed.[1 14] Probably a greater proportion of those who need admission will be more disturbed as others can be dealt with outside hospital. This has been our experience and has economic implications.[15]

Although generalising from services in one part of the country to another is difficult, Nottingham is representative of areas with middling demand. Its use of psychiatric beds for the 15-65 age group in 1980 was close to the mean of 0·45 bed per 1000 population estimated by Hirsch to reflect the requirements of England and Wales as a whole.[16] If the fall to the 1985 rate in Nottingham was reflected nationally the requirements for beds would be reduced by over a third. Our findings of reduced use of beds should not be interpreted as showing the newer service to be superior; that is the subject of a separate investigation. Nevertheless, we conclude with some confidence that when community and hospital psychiatric services are combined in an integrated model the benefits are quickly shown and economically feasible.

We thank Professor John Cooper and other members of the Nottingham case register, particularly Dr Sarah White, Pat Mounser, Norah Davis, and Richard Gancarzyk, for their help in preparing and checking data from the case register for this survey in statistical bulletins. We also thank Karen Robinson of the Department of Health and Social Security for help in obtaining national figures and for estimating the average number of beds used daily in NHS mental illness hospitals.

1 Jones K, Poletti A. The Italian experience in mental health care. *Hosp Community Psychiatry* 1986;**37**:795-801.
2 Hafner H. Do we still need beds for psychiatric patients? An analysis of changing patterns of mental health care. *Acta Psychiatr Scand* 1987;**75**: 113-26.
3 MacMillan D. Community mental health services and the mental hospital. In: Freeman H, Farndale J, eds. *Trends in the mental health services*. London: Pergamon Press, 1963:303-17.
4 Tyrer P. Psychiatric clinics in general practice: an extension of community care. *Br J Psychiatry* 1984;**145**:9-14.
5 Tyrer P, Seivewright N, Wollerton S. General practice psychiatric clinics: impact on psychiatric services. *Br J Psychiatry* 1984;**145**:15-9.
6 Jones SJ, Turner RJ, Grant JE. Assessing patients in their homes. *Bulletin of the Royal College of Psychiatrists* 1987;**11**:117-9.
7 Department of Health and Social Security. *Better services for the mentally ill*. London: HMSO, 1975.
8 Tyrer P. The hive system: a model for a psychiatric service. *Br J Psychiatry* 1985;**146**:571-5.
9 Griffiths R. *Community care: agenda for action*. London: HMSO, 1988.
10 Murphy E. Griffiths on community care: potentially disastrous. *Br Med J* 1988;**296**:876-7.
11 Donovan CN. Problems of psychiatric practice and community mental health centers. *Am J Psychiatry* 1982;**139**:456-69.
12 Williams P, Balestrieri M. Psychiatric clinics in general practice: do they reduce admissions? *Br J Psychiatry* 1989;**154**:67-71.
13 Burti L, Garzotto N, Siciliano O, Zimmerman-Tansella C, Tansella M. South Verona's psychiatric service—an integrated system of community care. *Hosp Community Psychiatry* 1986;**37**:809-13.
14 Hoult J. Community care of the acutely mentally ill. *Br J Psychiatry* 1986;**149**:137-44.
15 Tyrer P, Gill D, Farr P. Cost of community psychiatry. *Br J Psychiatry* 1986;**149**:795-6.
16 Hirsch SR. Planning for bed needs and resource requirements in acute psychiatry. *Bulletin of the Royal College of Psychiatrists* 1987;**11**:398-407.

(Accepted 30 May 1989)

Effect of hysterectomy on bowel function

T Taylor, A N Smith, P M Fulton

Hysterectomy is a common, comparatively safe operation. Many complications are known, but its possible relation with bowel function is less well reported. We performed a case-control study to see whether hysterectomy had any long term effect on bowel function and whether this was associated with altered urinary function.

Western General Hospital, Edinburgh EH4 2XU
T Taylor, MRCP, *senior house officer*, university gastrointestinal unit

A N Smith, FRCSED, *professor*, university department of surgery

Department of Community Medicine, University of Edinburgh Medical School, Edinburgh EH8 9AG
P M Fulton, FRCPED, *senior lecturer*

Correspondence and requests for reprints to: Professor Smith.

Br Med J 1989;**299**:300-1

Patients, methods, and results

We studied women in two general practices in north Edinburgh who had had a hysterectomy for benign disease two to eight years previously. Each woman was randomly matched by age and sex with another woman from the same practice. By reading practice records we excluded from the control group women who had had extensive abdominal operations and those with the irritable bowel syndrome. We devised a simple questionnaire to assess bowel function. It was adapted from those used in other studies[1 2] and validated in a sample of the women. One hundred pairs of women were sent questionnaires; 96 women who had had a hysterectomy and 95 controls responded, giving 91 matched pairs. Their age range was 32 to 63 (mean 48·8) years. We compared each pair by looking at bowel function (bowel frequency, use of laxatives, and consistency of stools).

The table gives the results. Women who had had a hysterectomy more commonly reported infrequent bowel motions. Fourteen of these women had a bowel motion every four days or less, compared with six controls (Wilcoxon signed rank test on paired data, $p<0·05$). The women who had had a hysterectomy were more likely to use laxatives and have hard stools, although the differences between the groups were not significant. Twenty one women who had had a hysterectomy but only 10 controls said that they were constipated when the other member of the pair did not. This difference, although not significant, was unlikely to have occurred by chance ($p=0·07$, McNemar's test). Fifteen women who had had a hysterectomy but only four controls had consulted a doctor about constipation ($p<0·05$, McNemar's test). Ten of the women who had had hysterectomy had persistently decreased bowel frequency and persistently increased urinary frequency. Of these, eight had noticed both these changes after hysterectomy. This was a highly significant association ($p<0·01$, χ^2 test).

Bowel function in women who had had hysterectomy and controls

	Bowel frequency		Use of laxatives		Stool consistency	
	At least every 3rd day	Every 4th day or less often	Fortnightly or more often	Less than monthly or never	Hard	Not hard
Women who had had hysterectomy	75	14	16	71	15	75
Controls	84	6	7	80	10	79

Comment

Our results show that after a hysterectomy women tend to have less frequent bowel actions than controls. Women who had had a hysterectomy consulted a doctor because of constipation more commonly than controls, which may indicate that their constipation was more severe and required professional help. There are several possible mechanisms for this difference: psychological, hormonal, pharmacological, and surgical. The mechanism is unlikely to be psychological as women are unlikely to become depressed after hysterectomy.[3] Women with constipation due to slow transit tend to have increased serum prolactin concentrations and decreased plasma oestradiol concentrations.[4] Altered hormone concentrati' may affect bowel habit after hysterectomy, especially in those women who also have oophorectomies. Some women