Are referrals by general practitioners influenced by the availability of consultants?

Martin Roland, Richard Morris

Abstract

To investigate variations in the number of outpatients seen in different NHS regions of Great Britain data on numbers of outpatients, number of consultants per 100 000 population, mortality, and prescribing rates were analysed for four specialties: medicine, thoracic medicine, psychiatry, and dermatology. The number of outpatients seen was strongly associated with the provision of consultants in all four specialties and only weakly associated with need for outpatient services as measured by standardised mortality ratios and mean numbers of prescriptions per patient issued by general practitioners.

Interpretations of differences in referral rates need to take into account variations in the supply of specialists as a factor that may influence the referral behaviour of general practitioners.

Introduction

Differences in the rates at which general practitioners refer their patients to hospital outpatient departments are well documented.¹⁻⁴ The number of outpatients seen also varies substantially among different regions of Great Britain.⁵ For example, after correction for population size more than twice as many new outpatients are seen in chest clinics in Wales than Wessex, and more than twice as many new psychiatric outpatients are seen in Scotland than East Anglia. We examined the extent to which regional variations in use of outpatient facilities are related to the provision of specialists rather than to the need for their services.

Method

We collected data on use of services by outpatients, levels of consultant staffing, and several measures of need for each of the regional health authorities in England and for Scotland and Wales. Scotland was the largest "region" (population over five million) and East Anglia the smallest (population just under two million).

The data referred to 1984 and form part of the statistics routinely issued by the Department of Health and Social Security and the Scottish Office and some unpublished data supplied by the Welsh Office.^{5,9}

The use of outpatient services was expressed as the numbers of new outpatients seen per 1000 population in four major specialties: medicine (comprising general medicine, cardiology, and geriatrics), psychiatry, dermatology, and thoracic medicine. Although most new referrals of outpatients were from general practitioners, these data included some referrals from one specialist to another.

Data were collected on the number of whole time equivalent consultants and senior hospital medical officers per 100 000 population for medicine (general physicians, cardiologists, and geriatricians), dermatology, psychiatry, and thoracic medicine. No analyses of junior staffing were carried out.

Mortality is commonly used as a measure of need for resources within the NHS. We used standardised mortality ratios for heart disease and cerebrovascular disease (International Classification of Diseases (9th revision) codes 390-438) as measures of need for general medicine and standardised mortality ratios for asthma, bronchitis, and emphysema (International Classification of Diseases (9th revision) codes 490-493) as measures of need for thoracic medicine. Morbidity in the population may be a better measure of need for outpatient services than mortality, but data on morbidity in different regions of the country are not routinely available. We approached the problem of measuring morbidity by analysing the mean number of prescriptions issued by general practitioners per patient for four classes of drugs: cardiovascular drugs, including diuretics; drugs acting on the respiratory system; psychotropic drugs; and skin preparations.

Thus we used different measures of need for specific clinics. For general medicine we used prescriptions for cardiovascular drugs in addition to the standardised mortality ratio, and for thoracic medicine we used prescriptions for respiratory drugs in addition to the standardised mortality ratio. For psychiatry and

University of Cambridge
School of Clinical
Medicine, Addenbrooke's
Hospital, Cambridge
CB2 2QQ

Martin Roland, MRCP,
director of studies in general
practice

Department of Community
Medicine, United Medical
and Dental Schools of
Guy's and St Thomas's
Hospitals, London
SE1 7EH

Richard Morris, MSc, lecturer
in medical statistics

Correspondence to: Dr
Roland.

TABLE 1—Indicators of need for medical care, use of outpatient services, and availability of specialist resources in England, Scotland, and Wales in 1984

	Standardised mortality ratio		Mean No of prescriptions/patient				No of new outpatients seen/1000 population				No of consultants/100 000 population‡			
	Circulatory diseases*	Respiratory diseases†	Cardiovascular drugs	Respiratory drugs	Psychotropic drugs	Skin preparations	Medicine	Thoracic medicine	Psychiatry	Dermatology	Medicine	Thoracic medicine	Psychiatry	Dermatology
Northern	114	113	1.24	0.78	0.84	0.43	13.00	2.45	2.79	10.02	3.69	0.24	2.14	0.38
Yorkshire	110	108	1.12	0.71	0.79	0.43	13.08	2.53	2.91	9.89	3.27	0.17	2.02	0.41
Trent	105	104	1.17	0.63	0.69	0.42	11.79	2.36	2.44	8.84	2.77	0.23	1.85	0.34
East Anglian	91	73	0.79	0.46	0.57	0.29	11.64	2.23	2.57	8.64	2.89	0.10	2.10	0.36
North West Thames	86	79	1.01	0.67	0.67	0.46	13.12	7.09	3.54	10.65	3.75	0.49	2.37	0.34
North East Thames	90	93	1.06	0.73	0.62	0.46	17.84	6.16	3.89	12.06	4.46	0.29	2.45	0.49
South East Thames	93	98	1.18	0.69	0.72	0.42	15.66	3.59	3.47	15.94	4.00	0.24	2.02	0.63
South West Thames	89	110	1.11	0.58	0.71	0.42	10.30	3.68	4.18	8.63	2.94	0.07	2.64	0.37
Wessex	89	70	1.13	0.56	0.71	0.39	10.68	1.90	2.29	7.12	3.11	0.11	2.32	0.33
Oxford	89	74	0.86	0.51	0.55	0.36	10.03	2.70	3.20	10.85	2.93	0.26	2.06	0.48
South Western	96	72	1.22	0.60	0.78	0.38	10.01	3.70	2.90	9.77	2.83	0.23	2.14	0.44
West Midlands	106	122	1.10	0.74	0.70	0.45	13.43	3.14	2.76	7.08	3.44	0.25	1.84	0.36
Mersey	106	106	1.27	0.92	0.85	0.50	14.20	2.00	3.30	8.56	3.75	0.29	2.19	0.31
North Western	116	130	1.34	0.91	0.95	0.48	17.46	3.84	3.40	9.72	4.03	0.41	2.27	0.30
Scotland	117	79	1.14	0.70	0.82	0.45	24.20	4.02	5.46	11.95	5.02	0.52	3.38	0.38
Wales	104	110	1.38	1.01	0.97	0.56	12.70	4.46	2.85	7.74	3.59	0.25	1.92	0.38

*International Classification of Diseases codes 390-438.

†International Classification of Diseases codes 490-493.

‡Whole time equivalents.

TABLE II—Need for outpatient services and supply of consultants related to use of outpatient facilities in Great Britain in 1984. Numbers are standardised regression coefficients

	Outpatient appointments/1000 population			
	Medicine	Thoracic medicine	Psychiatry	Dermatology
Need:				
Standardised mortality ratio	0.27*	-0.10		
Prescriptions issued by general practitioners	-0.19	0.03	0.04	0.10
Supply:				
Consultants/100 000 population†	0.88**	0.56*	0.87**	0.82**

*p<0.05. **p<0.001.

†Whole time equivalents.

dermatology we used only prescriptions for psychotropic drugs and skin preparations, respectively.

Simple and multiple regression analyses were performed to determine the relation among use of outpatient services, availability of specialist resources, and need in each of the 16 regions. As the flow of referrals across regional boundaries is greater among the Thames regions than among other regions analyses including and excluding the Thames regions were carried out; this made little difference to the results, which are therefore presented for all regions together.

Results

Substantial variation was found in the use of outpatient services, supply of specialist resources, and the measures of need in the 16 regions (table I). Of the six analyses that related need to the use of outpatient facilities, only the one relating the standardised mortality ratio for circulatory disorders to the use of medical outpatient facilities reached significance (table II). Even this relation was weak, indicating little difference in the use of outpatient services by regions with high and low standardised mortality ratios. The relations between use of outpatient facilities and supply of specialists, however, were stronger and were all significant. Figures 1 and 2 show two of these analyses, for medicine and dermatology. The number

of outpatients seen was clearly related to the supply of physicians and dermatologists.

Discussion

The relation between provision of services and their use has been shown previously: Logan *et al*, for example, commented that admissions for bronchitis in Liverpool seemed to be related more to availability of beds than to the need for treatment.¹⁰ Our study suggests that this is also true for outpatient facilities.

The analyses in this study provide little evidence for an association between the need for outpatient services and the use of those services. One possible reason for this is that the measures of need we used do not adequately reflect need as perceived by general practitioners when they decide whether to refer a patient. The number of prescriptions issued by general practitioners may reflect the need for treatment as perceived by the general practitioner at consultation, but do not necessarily reflect morbidity in the community. Although the prescribing habits of individual general practitioners vary widely, the number of prescriptions issued in an entire region would indicate the needs of the patients if there were no systematic regional differences in prescribing habits. Limitations in the indicators of need that are available for analysis restrict the conclusions that can be drawn from the analyses. These limitations also emphasise that few data on need are currently available for planning health care.

Though we studied the number of outpatients actually seen rather than referrals made by general practitioners, these variables should be roughly equal except when the waiting list for appointments is changing. We would not investigate the relation between the waiting time for appointments and number of referrals made as data are not routinely published on waiting times for appointments.

Studies of rates of referral by general practitioners to outpatient departments have tended to explain variations in terms of characteristics of the patients or the doctors. Future studies that include data on referrals from practices in different health districts should include the supply of specialist resources as a factor that influences referral rate. This is particularly important in view of the development of computerised information systems designed to measure referral rates of general practitioners.

Our data provide no information on how many outpatients should be seen. Further studies are needed to determine whether regions with good provision for outpatients are profligate users of resources or, conversely, whether those with poor provision are depriving their patients of potentially beneficial services.

We are grateful to Professor W W Holland for his helpful advice. This study was supported in part by the Department of Health and Social Security.

FIG 1—Numbers of new outpatients in dermatology related to supply of dermatologists. Data are for 1984; each point represents one regional health authority in England or Scotland or Wales

FIG 2—Numbers of new outpatients in medicine related to supply of consultants in medicine. Data are for 1984; each point represents one regional health authority in England or Scotland or Wales

- 1 Royal College of General Practitioners (Birmingham Research Unit). Practice activity analysis. 5. Referral to specialists. *J R Coll Gen Pract* 1978;28:251-2.
- 2 Dowie R. *General practitioners and consultants: a study of outpatient referrals*. London: King's Fund, 1983.
- 3 Morrell DC, Gage HG, Robinson NA. Referral to hospital by general practitioners. *J R Coll Gen Pract* 1971;21:77-85.
- 4 Cummins RO, Jarman B, White PM. Do general practitioners have different "referral thresholds"? *Br Med J* 1981;252:1037-9.
- 5 Department of Health and Social Security. *Hospital statistics: form SH3 EDP 4.5.6: national and regional summaries for 1984*. Blackpool: DHSS, 1985.
- 6 Department of Health and Social Security. *Hospital medical staff (England and Wales): regional tables 30 September 1984*. London: DHSS, 1985.
- 7 Department of Health and Social Security. *Health and personal social services: statistics for England*. London: HMSO, 1985.
- 8 Information Services Division, Scottish Office. *Scottish health statistics 1984*. Edinburgh: HMSO, 1985.
- 9 Office of Population Censuses and Surveys. *Mortality statistics: area*. London: HMSO, 1985. (Series DH5 No 11.)
- 10 Logan RFC, Ashley JSA, Klein RE, Robson DM. *Dynamics of medical care: the Liverpool study into use of hospital resources*. London: London School of Hygiene and Tropical Medicine, 1972.

(Accepted 12 May 1988)