

General practitioner workload with 2,000 patients

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SUMMARY

This study was designed to investigate the relationship between general practice workload, the number of partners in the practice, and the use of health centre premises. Thirty general practitioners in twelve randomly selected practices (each with a list size of 2,000 patients per doctor) agreed to record a week's work on pre-printed forms. Information was gathered on content of care in the surgery, number of non-surgery and indirect contacts and time spent on work activities. Content of care was influenced by whether or not the doctors were based in a health centre, rather on how many partners they had. Conversely the numbers of non-surgery and indirect contacts and the time spent on all work activities were more affected by the number of partners. Two factors — consultation rate and the rate at which doctors initiate consultations — were found to be independent of either of the two variables considered.

INTRODUCTION

In his study of list sizes in general practice, Butler¹ cites a number of official bodies who have regarded list size per doctor in the range 2,000 to 2,500 as optimum.^{2, 3, 4, 5, 6} He also states that doctors themselves regard an average list of about 2,000 to 2,100 as ideal. But what does a list of 2,000 patients actually entail in terms of workload for the general practitioner? And to what extent are the various components of workload affected by practice characteristics apart from list size?

In Northern Ireland, particularly in the Belfast conurbation, two features of general practice have recently become established — the building of health centres, and the increasing number of new general practitioner principals which has resulted in a fall in the average list size. This fall in the average number of patients per doctor has provoked discussion in many quarters. Some see a threat to income; others see potential for preventive and anticipatory care. To date, the target average list locally remains at 2,000 per principal.

We therefore proposed to carry out what should be considered a pilot study on existing workload among a representative sample of general practitioners from

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the Greater Belfast area. We wished to describe how doctors with varying numbers of partners, practising both within and outside health centres — but all with the 'ideal' list size of about 2,000 patients per doctor — manage their patients. Our hypothesis was that, despite the constant list size per doctor, there would still be considerable variation in workload between the practices. We were interested to see to what extent such variation was influenced by the number of partners in the practice, or affiliation of the practice to a health centre.

METHODS

All the general practitioners in one-, two-, three- or four-man practices within a 15-mile radius of central Belfast, and with a list size of approximately 2,000 patients (range 1,882-2,153), were identified with the help of the Central Services Agency. Thirty suitable practices were identified. From these 30 practices, 12 were selected to give three four-man, three three-man, three two-man and three single-handed study practices. The practices were based either in a health centre or in private premises.

The doctors were allocated randomly to one of two observation periods (1 October to 16 December, or 9 January to 30 March), and asked to fill in a set of forms for one complete working week during this period. The study weeks were selected randomly but where a doctor felt that his or her workload would be atypical during that week (due, for example, to their own or their colleagues' holidays) a replacement week was selected. Three data collection forms were used (copies available from the authors). The first obtained information on each patient seen in the surgery, including sex and date of birth and whether the consultation had been doctor- or patient-initiated. The doctor then indicated whether the patients had received a local, system or general examination, whether they had been sent for an X-ray or laboratory test, given a prescription or advice and information and whether they had been referred to other internal (treatment room, health visitor, etc) or external (hospital outpatient department) agencies. The doctor indicated what he considered to be the primary reason for the patient coming to the surgery, but it was not necessary to give a diagnosis. The contents of this category were then coded using the RCGP and Office of Population Censuses and Surveys classification of morbidity.⁷ The second form enabled the non-surgery aspects of a general practitioner's workload — within working hours — to be quantified. The doctor also recorded the number of new and return home visits made, the number of indirect consultations dealt with and the number of repeat prescriptions issued during working hours. The third form measured the amount of time spent on various work activities by each doctor. For each day in the study week the doctor was asked to record how long was spent in surgery, on home visits (both travelling and with the patient), clinics and sessions outside the practice, indirect consultations and administration and on any other work-related activity (such as reading journals).

RESULTS

Practice characteristics

Table I shows the characteristics of the 12 study practices, together with equivalent figures for the Greater Belfast area from which the practices were drawn. The selected practices showed a similar distribution of the various facilities studied.

TABLE I
Practice characteristics

	Practices in Greater Belfast area		Study practices	
	number	%	number	%
Total practices	124	100	12	100
Health centre	53	43	4	33
Attached treatment room nurse	81	65	9	75
Attached district nurse	74	60	8	67
Attached health visitor	95	76	9	75
Open access to laboratory	124	100	12	100
Open access to X-ray facilities				
— Chest clinic only	99	80	6	50
— Chest and skeletal	13	10	4	33
— Chest, skeletal and contrast media	12	10	2	17

Surgery consultations

Individual doctors' results were grouped and analysed in relation to number of partners and whether or not they were based in a health centre. The morbidity distribution of patients consulting in the surgery showed no significant difference either between the four partnership sizes (i.e. one- to four-man) or between health centre and non-health centre doctors. This enabled a valid comparison of their treatment by various groups of doctors. All figures refer to a period of five working days. Consultation rate was independent of the number of partners ($p=0.446$, Kruskal-Wallis one way analysis of variance⁸) and of the practice premises, although the figures show a higher rate in the three- and four-man practices. The overall mean of 46 patients seen/1,000 registered/week was lower than that found by two earlier Northern Ireland studies,^{9,10} but is in keeping with rates observed throughout the UK in the past 20 years.

We did not measure the exact amount of time spent with each patient seen in the surgery but obtained an approximation for comparative purposes by dividing the total time spent in the surgery during the study week by the total number of patients seen. The mean consultation rate (per 1,000 patients per week) ranged from 33 for the one-man practices to 57 for the three-man practices, with no difference between health centre and non-health centre practices. The mean time spent with patients varied widely from six to 27 minutes, and between 5% and 29% of the consultations were initiated by the doctor, with no significant differences for the various types of practice.

There was no difference between the various partnership groups in the rate of general examination (Table II) but there were very significant differences in the use of local and system examinations. The situation was reversed in the case of the health centre and non-health centre doctors, with only the proportion of patients receiving a general examination showing significant variation. The single-handed doctors' lower mean usage of the laboratory was influenced by one out of the four doctors requesting no tests during the study week. The mean value for

TABLE II
Patient care: percentage of patients who receive a service

Service	Range for all doctors	One-man	Two-man	Three-man	Four-man	p*	Health centre doctors	Non-health centre doctors	p*
Local examination	15-73	36	49	28	35	0.000	34	36	NS
System examination	7-61	19	25	44	34	0.000	37	32	NS
General examination	0-32	9	9	10	12	NS	13	9	0.001
Lab test	0-25	4	8	11	8	0.012	11	7	0.003
Prescription	36-91	63	70	68	64	NS	59	69	0.000
Advice or information	9-87	29	36	34	33	0.015	41	30	0.000
External referral	3-26	10	10	9	11	NS	9	11	NS
Item of service**	2-26	7	7	9	9	NS	10	7	0.010

*A p value of <0.01 from the Chi squared test is taken to show a significant result.

NS: not significant.

**Refers to activities such as immunisations, antenatal care, cervical smears, for which the doctor earns a fee.

the remaining single-handed doctors and the other doctors was similar. Comparison of the use of X-rays and internal referral (i.e. referral to workers attached to or working in association with the practice) proved impossible due to the varied nature of the circumstances pertaining to different practices. The rate of prescribing, although similar for all partnership sizes, was significantly higher among non-health centre doctors. The giving of advice or information, on the other hand, was used to a significantly greater extent by the health centre doctors. The rate of external referral (e.g. to hospital out-patient departments) was constant, at around 10% for all the doctor groups studied.

The mean number of new home visits during working hours varied very little (15 to 18) between the different types of practice (Table III), although the range for all doctors was between three and 39 visits per week. The mean number of doctor-initiated re-visits varied from four to six per week, except in the single-handed practices where a mean of only one was found. The range for all doctors

TABLE III
Mean values for non-surgery and indirect contacts during working hours

	Range for all doctors	One-man	Two-man	Three-man	Four-man	Health centre	Non-health centre
New home visits	3-39	16	18	18	16	15	18
Re-visits*	0-22	1	6	4	4	4	4
Indirect consultations**	3-99	26	29	44	22	33	27
Repeat prescriptions	0-258	49	119	98	106	63	123

*Visits which the doctor decides to make of his own accord rather than at the request of the patient.

**Consultations taking place via phone, letter or a third party.

was 0 to 22 re-visits per week. Indirect consultations were very variable (range three to 99 per week) but the mean values showed no difference. The lowest mean number of repeat prescriptions — 49 per week — was in the single-handed practices, doctors in the four-man practices issuing 106 per week. The non-health centre doctors issued 123 and the health centre doctors 63 per week.

The mean time spent by doctors on various work-related activities during the study week is shown in Table IV. No report is made on out-of-hours work because of the relatively short study period and the fact that some doctors, due to their rota, were not on call during their study week. The longest mean time spent on home visits, both in travel and with the patients, was for the two-man practices, and for the non-health centre practices. The two-man practices spent the least amount of time at clinics or other sessional work, and the most time in medical reading and with pharmaceutical company representatives. Both one- and two-man practices, and the non-health centre doctors, spent longer on administrative work than the others. The doctors in two-man practices overall spent the longest time in the surgery and had the longest overall workload (40 hours). There was no difference between the health centre and non-health centre practices for these measurements.

TABLE IV

Mean times spent on work activities (excluding 'on call', out of hours) during study week (hours)

	<i>Range for all doctors</i>	<i>One- man</i>	<i>Two- man</i>	<i>Three- man</i>	<i>Four- man</i>	<i>Health centre</i>	<i>Non- health centre</i>
Home visits — travel	0.6 – 10.0	2.6	4.4	3.2	2.2	2.6	3.2
Home visits with patient	0.3 – 13.0	4.3	6.5	4.4	3.5	3.4	5.0
Clinic or sessions	0.0 – 11.0	3.0	1.1	2.3	2.7	2.1	2.4
Indirect consultations	0.2 – 4.6	2.1	1.5	1.5	1.3	1.6	1.4
Administration	0.2 – 7.6	3.3	3.2	1.9	2.5	1.9	3.1
Others (medical reading and pharmaceutical representatives, etc)	0.0 – 13.9	1.3	3.6	1.3	2.2	1.9	2.3
Hours in surgery	6.0 – 20.0	13	20	17	15	17	16
Total (hours)		29.6	40.3	31.6	29.4	30.5	33.4

DISCUSSION

Several questions arise in this type of general practice study. How comparable are the practices? How representative is the sample of general practitioners being studied? How typical is the period (in our case one week) chosen for recording? How reliable are the observations made by the general practitioners?

Neither the age/sex distribution of the practices selected nor the morbidity recording during the study weeks differed significantly. Social class distribution in the practices, all drawn from the same geographical area, was unlikely to have differed significantly. Using the Belfast conurbation as the study area, a random sample of general practitioners, each looking after 2,000 patients, was chosen, representing practices varying in size from one- to four-man. The study was limited to these partnership and list sizes because, as recently as July 1983, 85% of the principals in Northern Ireland were in one- to four-man practices and the

average list size was 1,951. The percentage of study doctors who qualified prior to the 1965 General Practice Charter (which brought about a marked change in general practice conditions and thus, possibly, behaviour) is almost identical to the figure for Northern Ireland. The study practices were also found to be broadly representative of the local area as regards facilities.

Despite the small size of the study, the overall patient age/sex and morbidity distribution was the same as found for the United Kingdom by the very large National Morbidity Study⁷ (these data are available from the authors). Equally, there was no significant difference in the distribution of the same characteristics among patients seen by the various sizes of partnership or by doctors in health centres or other types of practice premises. Doctors were asked to pick a week during the study period which they thought would be typical, avoiding public and colleagues' holidays, etc. Some features of workload (e.g. surgery attendances) vary much less than house call rates. Obviously the general practitioners knew they would be 'observed' but they had no reason for distorting their figures and their anonymity was guaranteed.

Doctor-initiated consultations are substantially under the doctor's own control, thus allowing him to exert influence over his own workload. The practices studied here, though not each individual general practitioner, showed little variation in the extent to which they are influencing their workload by this means. The single-handed doctors chose not to examine 36% of their surgery patients — almost double the figure for the other partnership sizes. The single-handed general practitioners reported giving fewer of their patients advice or information during a consultation. Yet the single-handed general practitioners spent longer with each patient seen than did their three- and four-man colleagues. They also showed no significant difference in their rate of prescribing or external referral. The situation is far from clear-cut, and it is important to remember when considering aspects of workload such as investigations, prescribing and referral that at least some of such doctor activity may be a means of coping (e.g. ending a consultation by prescribing rather than continuing with more appropriate discussion), rather than a reflection of real workload. The health centre and non-health centre doctors showed significant variation in the use of general examinations. The formers' higher usage of general examination (and the fact that health centre doctors chose not to examine only 16% of their surgery patients compared with 23% for the non-health centre doctors) may well be influenced by available facilities and the full-time presence of nursing staff, rather than by workload. The higher rate of laboratory test usage by health centre general practitioners may well also have been similarly influenced.

The health centre doctors showed a higher rate of 'item of service' work (cervical smears, vaccinations, etc) than their non-health centre colleagues. But the overall mean for all general practitioners for 'item of service' work was only 8%, which seems a low figure when both the potential for earning extra income and the opportunity for preventive medicine are constantly emphasised. It would appear that while certain aspects of surgery workload — consultation rate, external referral, doctor-initiated consultations — were unaffected by either the number of partners in the practice or whether the practice was based in a health centre, other aspects were affected by one or both of these practice characteristics. The mean time spent with each patient, and the rate of local and system examination only varied with the number of partners, while the rate of general examination, prescribing and 'item of service' work was influenced solely by whether or not the

general practitioners were in a health centre. The giving of advice or information was found to be influenced by both practice premises and partner number.

We looked at the ratio of new visits to re-visits for each study group on the premise that a significantly higher ratio could indicate that the general practitioners concerned are reducing their workload due to the lower number of re-visits they make. The ratio for the single-handed doctors (16:1) is much higher than the other practices' figures (3:1, 4.5:1 and 4:1), but, due to the very low numbers of re-visits overall, we are wary of attaching too much importance to this finding. Considering the very large range for indirect consultations (3 – 99), all the study groups show remarkably similar usage. The single-handed general practitioners' use of repeat prescriptions was actually lower than that of the other three partnership sizes. The large difference in the number of repeat prescriptions issued by health centre and non-health centre doctors can only be partially explained by the higher proportion of elderly patients in the latter's practices which might be expected to account for a higher rate of repeats. The finding that the two-man practices' mean for time spent travelling to patients is much higher than the other partnership sizes' means can probably be attributed to the fact that two of the three two-man practices (both non-health centre) were in less densely populated areas. But distance cannot explain why the two-man general practitioners spent on average two hours per week longer with their patients at home. They were not seeing more patients at home but spending longer with each patient seen. The non-health centre doctors each devoted about 20 minutes per day more to their patients at home, while the health centre doctors spent around eight minutes per day more with their surgery patients. The non-health centre general practitioners would still seem to be following the more 'old-fashioned' way of operating in general practice, i.e. spending longer with patients at home than in the surgery. Possibly in consequence, they averaged 190 minutes a week (approximately half-an-hour per day) more time 'at work' than the health centre doctors.

The doctors studied spent a very varied amount of time on clinics and sessions. The amount of time spent on such work was found to decrease with the decreasing number of partners (the single-handed practices' figure is biased by one doctor who was involved with the Schools' Medical Service). The longer average time spent on administration by general practitioners in smaller practices and in non-health centre practices might well be expected. Doctors in a larger practice have more colleagues available to share the workload which may well more than balance the extra administrative burden, and in a health centre extra clerical help may be available to assist with administrative tasks. Overall, both the numbers of 'non-surgery' activities and the time spent on various surgery and non-surgery activities (with the exception of time spent travelling to patients on home visits) are influenced to a far greater extent by the number of partners than by whether or not the practice is in a health centre.

In this study several aspects of doctor workload involved with 2,000 patients were examined. Only time spent within conventional working hours was noted (range: 29.6 – 40.3 hours weekly). However, for most full-time doctors, when the weekly average out-of-hours 'on call' time was added, total working time per week was increased by 50%. But workload is not just 'items of service' per unit time. As can be seen, even when aspects such as patient number are held constant, patterns of provision of care can vary while facilities seem to exert a significant, though selective, influence. These areas of primary care merit further, more extensive scrutiny.

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REFERENCES

1. Butler JR. How many patients? London: Bedford Square Press, 1980. (Occasional papers on social administration; no. 64).
2. Central Health Services Council. Report of the Committee to consider the future numbers of medical practitioners and the appropriate intake of medical students (Willink Report). London: HMSO, 1957.
3. Central Health Services Council. Report of the Sub-Committee on the field of work of the family doctor (Gillie Report). London: HMSO, 1963.
4. British Medical Association. 'A charter for the family doctor service'. *Br Med J* 1965; Supplement 13 March: 89.
5. Royal Commission on Medical Education. Report (Todd Report). London: HMSO, 1968. (Cmnd 3569).
6. Central Health Services Council. Report of a Sub-Committee on the organisation of group practice (Harvard Davis Report). London: HMSO, 1971.
7. Royal College of General Practitioners, Office of Population Censuses and Surveys. Morbidity statistics from general practice 1971-2. Second national study, London: HMSO, 1979.
8. Hardyck CD, Petrinovich LF. Introduction to statistics for the behavioural sciences. Philadelphia, London, Toronto: Saunders, 1976.
9. McKnight AG, Jackson WE. Workload and morbidity in an urban general practice in 1976. *Ulster Med J* 1969; **38**: 47-50.
10. Maybin RP. Patient, hospital and family doctor: a survey in one practice. *Ulster Med J* 1963; **32**: 99-107.