Estimates of general practitioner workload: a review

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SUMMARY. This paper reviews four studies sponsored by the Department of Health which have attempted to measure workload in general practice and compares these with data from the general household survey. Despite the considerable differences in the objectives and methods employed by the four studies, they were found to contain remarkably consistent measurements of general practitioner workload. In a 'normal working week' general practitioners spend 38 hours on general medical service duties (including 24 hours of patient contact and five hours of travel to home visits), they see 150 patients or their representatives in surgery, and make 26 home visits. In an 'annual average week', taking into account holidays and sick leave, general practitioners undertake 90% of this workload. The studies show consistently large variations in the workload of general practitioners measured in this way, but fail to identify the key determinants of such variations. The reasons underlying the variation in general practitioner workload will remain unclear until we can distinguish between the expected, measurable variation and the residual, unexplained variation which may be due to the personal preferences of general practitioners.

Introduction

THE independent status of general practitioners in the UK and the present remuneration system, split between capitation fees, practice allowances and items of service payments, allows general practitioners considerable flexibility in how they structure the service they provide and the level of workload which they choose to undertake. At present, in order to qualify for the basic practice allowance a minimum list size of 1000 patients must be maintained and an average of 20 hours of direct services to patients must be provided per week. There is a statutory limit of 3500 patients per single-handed general practitioner or 3500 per partner in a group practice. However, there is no restriction on the maximum number of hours a general practitioner may choose to work in a week, and such variation in list sizes must be expected to have an impact on the volume of work undertaken. Furthermore, considerable variation is possible in the range of services provided by general practitioners. A service such as counselling is likely to make high demands on a general practitioner's time and may well increase the number of hours of patient contact in a week. On the other hand, screening for hypertension may be much less time consuming, but could well increase the mean number of patients seen by a general practitioner in a week. Many of these aspects of general practitioner workload are likely to be affected by the changes proposed both in the government white paper on primary care[1] and the National Health Service (NHS) review.[2]

In the absence of any national statutory information system providing data on services delivered by general practitioners to NHS patients, the workload of the individual general practitioner has proved difficult to describe and quantify. More recently, the need to provide good estimates of workload seems to have been superseded by a demand for data which emphasizes quality of care.[3] However, debates about the evaluation and implementation of measures to increase quality of care in general practice are frequently based on assumptions about a quantifiable average workload and the availability and accessibility of general practitioners.

In the last five years a number of studies have been published which make some attempt to measure the workload of general practitioners in the UK. This paper reviews four recent reports which provide such information[4-9] together with data from the Office of Population Censuses and Surveys (OPCS) general household survey. Taking into account the varying objectives and methods employed in the studies, conclusions are drawn about the reliability and consistency of the findings in relation to average general practitioner workload.

Aims and methods of the studies

In the absence of ideal measures of workload, a pragmatic choice must be made. For the purpose of this review the foremost indicator of personal general practitioner workload was taken to be 'patient contacts' with the general practitioner and this aspect of workload was described in terms of units of time spent with patients or, failing this, as numerical values such as numbers of patients seen per week.

Although each of the four studies contains information relating to this definition of workload, the stated aims varied considerably and this was reflected in the method employed. Table 1 summarizes the methods of the four studies together with those of the general household survey.

DHSS/GMSC study

The Department of Health and Social Security/General Medical Services Committee study[4] focused directly on workload. It was designed to provide information on levels of average workload to the Doctors' and Dentists' Review Body. A random sample of unrestricted general practitioner principals was identified from the 1983 and 1984 censuses of all UK general medical practitioners. After stratifying for age, list size and number of partners, the sample size was 2100 (7.7%) and there was a response rate of 58.3%. The workload data were obtained using a self-completed one week diary recording types of activity performed in each half hour period, and the survey extended over 52 weeks. From the available evidence this appears to be a nationally

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Table 1. Methodological characteristics of the studies reviewed and the general household survey.

Study	Focus	Year of study	Sample base	Sample size achieved	Data on workload
DHSS/GMSC[a]	GP workload measurement	1985	National stratified GP sample	1224	Recorded
Butler and Calnan[b]	List size and standards of care	1984	National random GP sample	1419	Estimated
Wilkin and Ho[c]	Variations in practice structure	1981	Local GPs (all responders)	397	Estimated
Wilkin and Metcalfe[d]	Variations in process of care	1982	Local GPs (all responders)	208	Recorded
Crombie and Fleming[e]	Evaluation of GP self-audit	1986	Local GPs (volunteers)	165	Recorded
OPCS	General household survey	1983	National random population sample	20 033	Reported contact rates

[a] Ref 4. [b] Ref 5. [c] Ref 6. [d] Ref 7. [e] Refs 8 and 9.

representative sample of general practitioners. However, given the lack of information about what influences workload and in view of the low response rate, it is not possible to say for certain that the responding general practitioners were truly representative with respect to workload.

Butler and Calnan study

The aim of the study by Butler and Calnan[5] was to explore the relationship between general practitioner list size and standards of care. The 'standards of care' were norms derived by general practitioners in relation to particular aspects of their work. The study population consisted of a random sample of 2104 unrestricted principals. The study entailed a postal survey for which a response rate of 67% was achieved. Questions on workload formed a relatively small part of the study and all information relating to units of time and patient numbers was obtained from a questionnaire in which general practitioners volunteered estimates of activity in their last typical working week. Available evidence suggests that this was a nationally representative sample of general practitioners. However, the same reservations apply as for the DHSS/GMSC study.

Manchester study

The study by Wilkin and colleagues comprised three methodologically distinct stages conducted between April 1981 and November 1982. The overall aim was to describe the variations in general practitioner services provided within six health authority areas in Greater Manchester, and to focus on differences between inner and outer city areas. Only the first two stages dealt with workload.

In the first stage, which focused on practice structure, the survey population consisted of all 522 unrestricted general practitioner principals with surgeries in these health authorities.[6] All information relating to workload was obtained from interview schedules in which general practitioners volunteered estimates of their activity during a 'normal working week'. A response rate of 70% was achieved at this stage of the survey (397/522). However, the report gives figures based on 199 general practitioners who took part in both the first and second stages of the study and who had personal list sizes of 1000 or more patients.

The aim of the second stage of the study was to describe the process of care given by a representative group of general practitioners to different patient groups.[7] All general practitioners who responded to the first stage were invited to participate by recording data on all consultations conducted by them during sample periods chosen to reflect seasonal variation. A final response rate of 52% was achieved (208/397). Surgery start and finishing times were also recorded as part of the data set and these provide the main source of workload information. In both stages of the study the sample sizes achieved were shown to be similar to the general practitioner population in the study area as a whole. However, the study area itself contained general practitioners with significantly different characteristics to the national population and the sample must be expected to reflect these differences. The national representativeness of these data should therefore be considered weaker than that of the DHSS/GMSC and Butler and Calnan data.

Crombie and Fleming study

The overall aim of the study by Crombie and Fleming seems to have been to evaluate self-audit in general practice using the practice activity analysis method developed at the Royal College of General Practitioner's Birmingham research unit.[8,9] Details of workload were obtained by recording the number of occasions on which particular activities were carried out but not the time involved. There was no indication of how the participating general practitioners were selected or how representative they might have been of the wider population. Groups of general practitioners from different areas volunteered to complete practice activity analysis sheets over a two-week period, but it is not clear whether the two-week periods were spread throughout the year in order to ensure a seasonal balance in the data. The total number of general practitioner principals completing workload review records was 106 in 1981 and 59 in 1982. The behaviour of these general practitioners is unlikely to be representative of that of the population of general practitioners in England and Wales.

General household survey data

The data from the OPCS general household survey are population-based. People are asked about their contact with general practitioner services and this provides alternative estimates of general practitioner workload in terms of patient numbers. We have analysed data from the 1983 general household survey in which information is given on contact with doctors for a random sample of 20 033 people, of whom 2978 claimed to have talked to general practitioners in the previous two weeks. There are possible biases in general practitioner consultation data resulting from unreliable recall of facts over the

two-week reference period, differences in the consultation rate of non-responding households, and statistical difficulties in using data from two weeks to estimate annual means.

Problems in comparing workload data

Comparisons of the estimates of mean workload in each study are restricted by the lack of consistent objectives and design, as well as differences in the precise definitions of individual workload indicators. The results presented here make reference to such discrepancies.

Another important difference to be considered when comparing workload estimates is the base unit for which data were collected. Workload is usually described in terms of weekly estimates which may refer to two quite separate measures. First, workload may be described in terms of an 'annual average week' calculated from aggregated data on random weeks for individual general practitioners. This takes into account the fact that in any single week some general practitioners may work less than their normal hours owing to sickness, annual leave or other commitments and some may work extra hours to cover for absent colleagues. Alternatively, workload may be described in terms of a 'normal working week' where the mean is either calculated from the sum of the estimated individual 'full' or 'normal working weeks' provided by the general practitioners, or is estimated from random-week data from which those general practitioners not working in the sample week have been excluded. Using the 'normal working week' produces an inflated mean weekly workload figure.

Only the DHSS/GMSC study and the general household survey provide 'annual average week' estimates; the remaining studies present data in terms of a general practitioner's 'normal working week'. The DHSS/GMSC estimates are based on random-week data from which those general practitioners not engaged in the activity described during the sample week have been excluded. By this means the DHSS/GMSC estimates can be regarded as similar to the 'normal working week' estimates provided by the other studies, but they may not be directly comparable as there is no way of adjusting for those general practitioners working extra hours to cover for colleagues during the sample week. Estimates from general household survey data, which are based on 'random' two-week periods, have been adjusted to 'normal working weeks' by assuming that general practitioners work nine weeks in every 10 and have a list of 2000 patients.

Findings

Comparative mean workload estimates were identified for some or all of the studies for the following indicators: mean number of hours spent per week on surgery consultations, home visits, general medical service duties other than patient contact, total general medical service duties, and on-call time. General medical service duties were defined in the DHSS/GMSC study as: surgery consultations, home visits including travel, clinics (excluding those paid for by the health authority), teaching (excluding medical students), case discussion, practice administration, dispensing, minor surgery, seeing professional representatives, and 'professional' reading. They do not include being on-call when no general medical service duties are performed. Estimated means are also provided for the number of patients seen in surgery per week and the number of home visits made per week.

Table 2 shows that the estimates provided by each of the studies in terms of the mean number of hours spent on patient consultations per week are remarkably consistent. The method of data collection appears to have made little difference; the estimates obtained from recorded data on 'actual' weeks in the DHSS/GMSC study compare closely with those obtained from general practitioners' recall or perceptions of their 'normal working week' in Butler and Calnan's study and in the first stage of Wilkin's Manchester study. Allowing for some differences in definitions, Table 2 indicates that general practitioners spend about 24 hours per week seeing patients. Between 18 and 20 hours of this time is taken up with surgery consultations.

Quantifiable data on general medical service duties other than consultations were available only from the DHSS/GMSC study and Butler and Calnan's study. Although there is no precise definition of general medical service duties in Butler and Calnan's study, Table 3 suggests that there is a high level of agreement between the findings of this study and those in the DHSS/GMSC report. It is possible that the discrepancy between the studies in the separate figures for general medical service duties is due to the inclusion of practice clinics in Butler's category of surgery consultations. In the DHSS/GMSC study, time spent in practice clinics is recorded separately and makes up 1.9 hours of the total 9.4 hours of other general medical service duties. Overall, these two studies agree that general practitioners spend approximately 38 hours per week on general medical service duties.

Although general practitioners are contractually obliged to provide 24 hour cover for their patients, on-call duties do not

Table 2. Estimated mean time spent on patient consultations in 'normal working week' with standard deviation (SD) in parentheses.

	Mean number of hours per week (SD)			
	DHSS/GMSC[a]	Butler and Calnan[b]	Wilkin and Ho[c]	Wilkin and Metcalfe[d]
Surgery consultations[e]	17.9[f] (6.3)	20.0[g] (9.0)	17.9[h] (6.7)	14.4
Home visits and surgery consultations	23.8[i]	–	23.6[i]	19.1[k] (7.0)
Home visits (incl. travel)	10.9 (6.3)	10.5 (6.0)	–	–
Home visits and surgery consultations (incl. travel)	28.8	30.5	–	–

[a] For those GPs recording specified activity. SDs recalculated by the Department of Health (personal communication). [b] Estimated by GPs for last typical working week. SDs calculated from coefficients of variation and means for five groupings of list size. [c] Estimated by GPs for last full working week. Mean and SD estimated from histograms in report. [d] Recorded by GP on 15 sampled days. [e] Face-to-face and proxy consultations with patient representatives. [f] Estimated by pro rata allocation of half-hour periods between multiple activities recorded, including telephone consultations. [g] Estimated from GP approximations of number of hours spent on activities in last full week. May include patients seen in practice clinics. [h] Estimated from number of hours timetabled for surgery consultations. [i] Estimated from recorded surgery activities plus contact time recorded for each home visit in sample week. [j] Estimated from timetabled surgery hours plus an assumed 15 minutes per home visit. [k] Estimated from GP recorded surgery start and finish times plus 15 minutes per home visit recorded. SD estimated from frequency distribution.[10]

Table 3. Estimated mean time spent on general medical service (GMS) duties in 'normal working week' with standard deviation (SD) in parentheses.

	Mean number of hours per week (SD)	
	DHSS/ GMSC[a]	Butler and Calnan[b]
Home visits and surgery consultations (incl. travel)	28.8	30.5
Other GMS duties	9.4	8.3
Total GMS duties	38.2 (12.4)	38.8
On-call only	30.3	25.2
Total GMS duties plus on-call only	68.7 (33.9)	64.2

[a] For those GPs recording some GMS duties in sample period, excluding GPs on holiday (10.4%) or doing no GMS duties (0.7%). SDs obtained by personal communication. [b] Estimated by GPs for last typical working week. SDs calculated from coefficients of variation and means for five groupings of list size.

have to be undertaken personally and the range of provision varies considerably between general practitioners. In the light of this, personal on-call time should perhaps be regarded as a secondary workload indicator. Only the DHSS/GMSC study specifically distinguishes between general medical service duties carried out while on duty and those undertaken while on-call. These data suggest that approximately 14% of on-call time is taken up with general medical service duties. In order to calculate the time spent per week on-call only Butler and Calnan's figure has had to be adjusted to prevent the double counting of general medical service duties undertaken while on-call (Butler JR, *et al.* List sizes, standards and performance in general practice, report to the DHSS, 1986). The difference between the two estimates in Table 3 is probably due to the fact that while the DHSS/GMSC data include on-call at all times of the day and night, Butler and Calnan's study covers only specified hours in the evenings and at weekends.

It is also possible to compare estimates provided by the studies of the number of patients seen at home or in surgery in a week. Table 4 shows that the number of patients seen in the surgery ranged from 121 in the second stage of the Manchester study to 163 in Butler and Calnan's study. Comparisons are again made difficult by a lack of uniformity in the definitions and inclusion criteria employed in each study. For example, the second stage of the Manchester study has to be adjusted to allow for telephone consultations if it is to be directly comparable to the DHSS/GMSC estimate. There is some evidence of a trend towards lower estimates from recorded data, that is to say general practitioners may tend to overestimate their workload when asked about a 'typical' week. Taking these factors into account there does appear to be a degree of consistency across the reports, indicating that on average general practitioners see about 150 patients (or their representatives) in surgery each week.

There is less scope for confusion over the definition of a home visit. With the exception of the second stage of the Manchester study, the mean number of home visits made per week ranged from 22 to 29 in the four studies. It has been suggested that the low Manchester figure was due to a degree of under-recording during the data collection process.[10] An alternative explanation could be that the estimate of general practitioner consultations at home and in the surgery from the second stage of the Manchester study reflects the behaviour of the local population of general practitioners, which is not nationally representative.

The estimates for both home visits and surgery consultations are confirmed by the estimates from the population-based data available from the general household survey, also shown in Table 4. These estimates are comparable in most respects, but the estimate of home visits is likely to include visits made by deputizing service doctors.

Despite their different objectives and the range of methods employed, the estimates of mean workload provided by the studies are remarkably consistent. The estimated mean workload for a 'normal working week' involves 38 hours spent on general medical service duties of which 24 hours are spent on patient consultations at home or in the surgery (19 hours in surgery and five on home visits). The remaining 14 hours are split between travel to home visits (five hours) and other general medical service duties including clinics, practice administration, case discussion and dispensing. General practitioners spend an estimated additional 25–30 hours per week on-call without being required to undertake any general medical service duties; the majority of these hours will fall at weekends or between 18.00 and 09.00 hours during the week.

However, it must be stressed that these figures relate to a 'normal working week' and not to a random 'annual average week'. It could be argued that the latter is the most appropriate unit for measuring general practitioner workload as it represents the mean hours worked by general practitioners in any week of the year. Unlike the annual average week estimates, the normal working week estimates cannot be multiplied by 52 to give an annual estimated workload.

As stated above, the only source of representative annual average estimates provided by general practitioners is the DHSS/GMSC study. Data from this study can be used to adjust the 'normal working week' estimates in the other studies and give an approximation of an 'annual average week'. The ratio between the estimates for all general practitioners including those not working in sampled week and those restricted to general practitioners undertaking various activities during the sample week

Table 4. Mean number of patients seen in 'normal working week' with standard deviation (SD) in parentheses.

	DHSS/ GMSC[a]	Butler and Calnan[b]	Wilkin and Ho[c]	Wilkin and Metcalfe[d]	Crombie and Fleming[e]	OPCS[f]
Mean number of patients:						
Seen in surgery[g]	139[h] (54)	163[i] (61)	157[i] (64)	121 (43)	141[k] (40)	157[h]
Visited at home	29 (18)	25 (14)	23 (14)	15	22 (11)	30
Ratio of number of patients seen in surgery to visited at home	4.8	6.5	6.8	8.1	6.4	5.2

[a] For those GPs recording specified activity. SDs obtained by personal communication. [b] Estimated by GP for last typical working week. SDs calculated from coefficient of variation and means for five groupings of list size. [c] Estimated by GPs for last full working week. Mean and SDs estimated from histograms in report. [d] Recorded by GP on 15 sampled days. SD estimated from frequency tables. [e] Recorded by GPs for a two-week period. SDs estimated from reported SDs for a two week period. [f] Estimates made assuming a list size of 2000 and that the GP works nine weeks out of every 10. [g] Face-to-face consultations and proxy consultations with patient representatives. [h] Includes telephone consultations. [i] Total number of patients seen in general surgeries in last 'typical' week. May include patients seen in practice clinics by GP. [j] Number of patients seen in surgery in 'average week'. [k] Includes telephone consultations and telephone calls with health visitor and social workers about patient.

was found to be consistently 0.9. It is therefore possible to reduce mean workload estimates for a 'normal working week' by 10% and identify an identical set of estimates for a random 'annual average week'. On this basis, general practitioners would be expected to spend a mean of 34 hours per week on general medical service duties and a further 23–27 hours on-call.

Discussion

An examination of estimates of mean workload will inevitably obscure the variation which exists between individual general practitioners and groups of general practitioners. All of the studies reviewed here conclude that such variations exist. Variations around the mean estimates presented here are shown in the tables as standard deviations. They are reported wherever the available data permit.

The standard deviations shown in Table 2 are similar for all the studies and this is also true for the numbers of patients seen per week (Table 4). In both these tables the standard deviations highlight the large variations which exist in the behaviour of general practitioners with respect to these aspects of workload. For example, if both the time spent on surgery consultations and the numbers of patients seen each week are normally distributed, then the standard deviations would imply that 5% of general practitioners spend less than about five hours or more than about 30 hours each week on surgery consultations, and see less than 40 patients or more than 250 patients each week. The level of analysis of workload variation is different in each report and reflects the original aims of each study. However, despite some elaborate analysis none of these studies was able to provide a satisfactory explanation of more than a small part of the large variation found between the workloads of general practitioners.

The second national morbidity study[11] demonstrated that although activity levels were very different from one doctor to another the activities of individual doctors were very consistent from one year to the next. This implies that this variation is not random but is due to systematic structural effects or the individual preferences of general practitioners. In fact, the authors of more than one of the reports reviewed have suggested that the variation in general practitioner workload rates is largely due to individual preference in patterns of work. In order to establish the relative contribution of individual general practitioner preferences, it is first necessary to take out those effects which might be said to be demand led, systematic and to some extent expected, including factors relating to the size and make-up of the general practitioner's list and factors relating to the environment and structure of the practice. Once this has been done it should be possible to estimate the size of the remaining variation and perhaps try to offer some explanations.

A call was made 25 years ago for more studies to be made of the factors which cause these large variations in workload,[12] and with the planned repeat of the DHSS/GMSC study there is now the possibility of carrying out a systematic analysis of variation in workload. It is to be hoped that this opportunity will not be missed.

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