

Practice nurses' workload and consultation patterns

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SUMMARY

Background. There are calls for the role of the practice nurse to be developed and extended. Before areas for further training and education can be identified, baseline data are needed on practice nurses' current activity and workload.

Aim. A study was undertaken to analyse the activity of practice nurses in two large inner city general practices and to assess the skills mix of the nursing staff required to meet the needs of the practices.

Method. The study practices had a combined list of 26 000 patients, 80% of patients attracting a deprivation allowance. Each practice employed three practice nurses. A nurse activity index with 45 codes was constructed to describe patient-nurse consultations. Activity codes were categorized into traditional treatment tasks, extended role tasks or diagnosis and management tasks. For eight months, practice nurses in practices Y and Z recorded activity index codes for each patient consultation. Practice Y also recorded the source of referral and the age and sex of the patient.

Results. There were 13 898 practice nurse consultations during the study period, equivalent to an annual nurse consultation rate of 0.8 per patient. Compared with the practice population as a whole, the patients attending the practice nurses in practice Y were older (mean age 43 years versus 37 years, $P < 0.001$). Those attending the practice nurses in practice Y were also more likely to be female (61% of consultations were with female patients compared with 50% of the practice population as a whole, $P < 0.001$). In practice Y, patients referred themselves to the practice nurse in 42% of consultations, 32% were follow-up consultations and in 25% of cases the patient had been referred by a doctor. The most common reasons for nurse consultation were blood tests (15% of procedures in practice Y and 18% in practice Z) and dressings (13% in both practices). Most procedures in practices Y and Z were in the traditional treatment category (61%), 26% were in the extended role category and 9% in the diagnosis and management category (3% coded 'other', 1% uncoded). Between practices, the greatest difference in recorded procedures was for asthma check ups (7% of procedures in practice Y compared with 2% in practice Z).

Conclusion. This study describes the workload of practice nurses in two inner city practices over eight months. Other practices could use the activity index to make comparisons over time and between practices. Up to 60% of nurses' work in the study practices could be done by a nurse without extended training and up to 30% could be done by a health care assistant, but with some loss of quality. It is

suggested that half the nursing hours available to a practice should be offered by a nurse with extended training in order to undertake and develop extended role tasks and diagnosis and management tasks.

Keywords: workload; consultation patterns; patterns of work; practice nurses; skill mix.

Introduction

IN recent years, the role of the practice nurse has been extended to include the diagnosis and management of chronic illness and minor illness, and preventive medicine.^{1,2} Nurses are better at following protocols for chronic disease management and achieve more successful outcomes than general practitioners,^{1,3} and patients have shown higher levels of satisfaction when receiving follow-up family planning advice from practice nurses than from doctors.⁴

The introduction of the new contract for general practitioners in 1990 made new demands on general practitioners including health promotion, immunization and cervical cytology targets, registration health checks, and yearly checks for elderly people. Nurses carrying out these tasks can generate income to help pay for their own costs. Consequently, the number of whole time equivalent practice nurses in England and Wales increased from 3700 in 1986 to 18 000 in 1991.⁵ By 1989, because of the requirements of the new contract,⁶ 50% of general practitioners had created a new nursing post and 83% had expanded the role of those nurses they already employed.⁵

In 1989 the Royal College of General Practitioners task force on practice nursing reported that 'basic nurse education did not equip a nurse to work in general practice and that it is the general practitioner's responsibility to ensure that suitable training is made available both at the beginning of their employment and on a continuing basis'.⁷ General practitioners are now ready to accept the further development of the nurse's role,^{8,9} but how are they going to organize further education for nurses? A postal survey found that 51% of practice nurses considered the current provision of continuing education inadequate or non-existent.¹⁰ Baseline information is essential for planning the development of practice nursing and training programmes. Although there are descriptive accounts of the work of individual nurse practitioners,¹¹⁻¹⁶ there are little quantitative data of practice nurses' workload.

The perceptions of nurses themselves are interesting. A postal survey of nurses found that most were involved in the care of patients with common medical conditions such as diabetes and asthma.¹⁷ Only a minority had an appropriate qualification for the activities they undertook other than for family planning, where 62% held an English National Board for Nursing, Midwifery and Health Visiting certificate or equivalent. Only 1% of nurses undertaking diabetes care had completed a recognized course in the subject. Despite this, the topic which most nurses felt should be covered by further training was counselling. It should be recognized that nurses' perception of their potential role may be different from that perceived by general practitioners and patients.

A study was undertaken to describe the current use made by a practice and its patients of available practice nursing resources, in order to identify training needs and areas in which the nursing role could be extended, and to make an assessment of the skills mix

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© British Journal of General Practice, 1995, 45, 415-418.

required to deliver nursing services. Morbidity indices based on a diagnostic model were found to be unsuitable for describing the work of practice nurses. Therefore, a 45-code activity index was developed. A second practice was included in the study in order to extend the database and test the applicability of the activity index.

Method

Setting

Practice Y is an inner city practice with approximately 12 800 patients of mixed socioeconomic class, 80% of whom attracted a deprivation allowance. Medical staff comprised six full-time equivalent general practitioner partners and two trainees, and nursing staff comprised three full-time practice nurses employed on a nursing sister grade, grade G. All three nurses had a certificate in family planning and worked 37.5 hours a week. One was a registered sick children's nurse, had an RCGP asthma care diploma, and started a nurse practitioner diploma course during the study period. A second nurse had a BSc in nursing and the English National Board certificate 225 in gynaecology; the third had a degree unrelated to nursing and was a registered midwife and health visitor.

Practice Z is also an inner city practice with approximately 13 000 patients of similar social mix to practice Y; 80% of patients attracted a deprivation allowance. There were six full-time general practitioner partners. Three part-time nurses worked a total of 78 hours a week (25 hours, 25 hours and 28 hours, respectively). Two of the nurses (both of whom were on a nursing sister grade, grade G) were registered general nurses and registered midwives. One had a certificate in family planning. The third nurse was an enrolled nurse and was employed on grade F.

Nurse activity index

The nurse activity index was developed by M K and a number of nurses over six years in order to produce a coding system that would allow easy classification of over 95% of nursing tasks. Initially, the nurses listed each task as they worked, using their own words. These tasks were grouped by core function, and given a code name. Tasks which did not fit into a group were classified as 'other', but given a code name if they recurred. A 45-code activity index was produced and activity codes were grouped into the following three categories: traditional treatment tasks — tasks covered by general nurse training, not specific to general practice; extended role tasks — tasks requiring additional training, usually specific to general practice, although they may be included in other further nursing education; and diagnosis and management tasks — tasks requiring a diagnostic decision and/or decision concerning alternative management options.

A one-month pilot study allowed the nurses to become familiar with coding and with making full notes in the medical records. Throughout the pilot study and the main study there were weekly meetings between the nurses and L J, in order to resolve any problems.

Data collection

The study was carried out between October 1992 and May 1993, inclusive. Nurses coded each consultation. Age, sex and referral source data (self-referral, nurse-initiated follow up or doctor referral) were collected for patients in practice Y. Patients consulting for more than one problem, for example dietary advice and blood pressure check, were given two code numbers, provided that the nurse followed the practice protocol for each problem.

Statistical methods

Data were tabulated by L J and a trained worker into SPSS.

Where any consultation was not clearly coded, the medical notes were checked. Each week, 10 sets of notes were selected at random by each data handler and cross-checked to ensure consistency between the two data handlers.

Categorical data were analysed using the chi square test with Yates correction where appropriate. To compensate for the large number of comparisons, $P < 0.01$ was taken to be significant. Continuous data were analysed by the Student's *t*-test.

Results

Patient profile

There were a total of 13 898 nurse consultations given 15 552 activity codes, giving a mean of 1.1 procedures per consultation. In practice Y there were 7876 procedures coded in 6858 consultations (1.1 procedures per consultation), and in practice Z there were 7676 procedures coded in 7040 consultations (1.1 procedures per consultation).

The age distribution of patients consulting the practice nurses and of all practice patients in practice Y is shown in Table 1. Those attending the practice nurses were older than the practice population as a whole (mean age 43.3 years, standard deviation (SD) 30.0 years versus 36.6 years, SD 21.0 years, Student's *t*-test, $P < 0.001$). Of the 6858 consultations in practice Y, 4160 (60.7%) were with female patients (data missing for seven cases). The proportion of females attending the nurses was higher than the proportion in the practice population as a whole (50.1% of 12 827, $\chi^2 = 200$, 1 degree of freedom, $P < 0.001$).

Of the 6858 consultations with practice nurses in practice Y, 2891 were patient self-referrals (42.2%), 2213 were follow-up consultations initiated by a practice nurse (32.3%) and 1689 were referrals from a doctor (24.6%); source of referral not coded for 65 patients.

Allocation of practice nurses' time

A total of 2932.5 nursing hours were available in practice Y for 7876 procedures during 6858 consultations. This is equivalent to 2.7 procedures per hour or 2.3 consultations per hour; mean consultation length was 25.7 minutes or 22.3 minutes per procedure. For practice Z, the total nursing hours available were 2418 for 7676 procedures during 7040 consultations, equivalent to 3.2 procedures per hour or 2.9 consultations per hour; mean consultation length was 20.6 minutes or 18.9 minutes per procedure. The annual nurse consultation rate in both practices was 0.8 per patient. These data do not take into account time spent on administrative duties, which occupied a total of three hours per week in practice Y and a total of 30 minutes per week in practice Z. In practice Z, non-nursing staff assisted with nursing administration.

Table 1. Age distribution of patients attending practice nurse consultations and of all patients in practice Y.

Age (years)	% of 6637 nurse consultations where patient aged*	% of 12 827 patients in whole practice aged
≤ 4	3.2	5.5
5-14	8.3	14.1
15-24	12.0	11.5
25-34	17.3	20.8
35-44	13.5	15.7
45-54	13.8	12.6
55-64	12.3	8.8
65-74	10.4	6.0
75+	9.1	5.0

*Data missing for 221 consultations.

Practice nurse activity

Of all 7876 nurse procedures in practice Y, 4654 came under the category of traditional treatment tasks (59.1%). A total of 2209 procedures were extended role tasks (28.0%) and 682 were diagnosis and management tasks (8.7%); activities coded as 'other' or uncoded for 331 procedures, 4.2%. Details of activity codes for practice Y are shown in Table 2. In practice Z, of all 7676 procedures, 4824 were coded as traditional treatment tasks (62.9%), 1818 as extended role tasks (23.7%) and 732 as diagnosis and management tasks (9.5%); activities coded as 'other' or uncoded for 302 procedures, 3.9% (Table 2). The nurses in practice Y carried out significantly more procedures categorized as extended role tasks compared with nurses in practice Z (28.0% versus 23.7%, $\chi^2=40.2$, 2 df, $P<0.001$). Blood tests were the most commonly recorded activity in both practices, followed by dressing applications/changes. Regular injections, immunizations and travel checks were the next three most commonly recorded activities. Between practices the greatest difference in recorded activity codes was for asthma check ups (7.0% of procedures in practice Y compared with 1.7% in practice Z, $P<0.001$).

There were no significant changes in the distribution of the three consultation categories (traditional treatment tasks, extended role tasks and diagnosis and management tasks) during the eight-month study period. Immunizations peaked in October because of influenza vaccinations.

Accuracy of data

Fifty six procedures in practice Y and 84 in practice Z did not have an activity code assigned to them (1.0% of all consultations) because the nurses did not record a code on the appointment sheet and did not write anything in the patients' notes. A total of 275 procedures in practice Y (3.5%) and 218 in practice Z (2.8%) had the code 'other' assigned to them. Over half of these consultations concerned drug-dependent patients who had their medication handed to them daily by the nurses. Sex was not recorded for seven patients in practice Y. Two of the cross-checked entries needed modification. The data handlers checked that nurses coded consultations according to criteria set at the outset of the study and found errors in three of 320 checked cases (0.9%).

Discussion

The work of practice nurses is likely to become of increasing importance as hospital bed numbers are reduced and further work is delegated to primary care. Before extending their role, it is important to establish baseline data on workload, training needs and patient acceptability. Previous work on the role of nurses in general practice has concentrated on nurse practitioners rather than practice nurses,¹²⁻¹⁶ and there are little quantitative data concerning practice nurses' workload. Studies analysing nurse practitioner workloads have tended to be of short duration, and have used a morbidity index based on a diagnostic model.^{12,13} These studies show that there is a distinct role for both medical and nurse practitioners. A postal survey has reported on types of work undertaken by practice nurses,¹⁸ but there has been no examination of patterns of work.

This study adds to the database concerning practice nurses' workload and is the first to examine in detail practice nurses' workload over a long period (eight months) in two practices. The 45-code activity index allowed the nurses in both practices to classify their work quickly and accurately, and is more appropriate than one drawn from a medical diagnostic model. The index could enable practices to monitor the effects of training, as well as allowing comparisons with other practices. Practices wishing to

Table 2. Activities coded as traditional treatment tasks, extended role tasks, and diagnosis and management tasks in practice nurse consultations in practices Y and Z.

Activity code	No. (%) of procedures with coded activity in practice	
	Y (n = 7876)	Z (n = 7676)
<i>Traditional treatment tasks</i>		
Blood pressure measurement	504 (6.4)	268 (3.5)***
Blood test	1204 (15.3)	1346 (17.5)**
Catheter care	3 (0)	7 (0.1)
Dressing application/change	1023 (13.0)	1028 (13.4)
Ear syringe	291 (3.7)	281 (3.7)
ECG recording	104 (1.3)	99 (1.3)
Immunization	557 (7.1)	666 (8.7)***
Pregnancy test	121 (1.5)	89 (1.2)
Regular injection	557 (7.1)	581 (7.6)
Suture removal	115 (1.5)	177 (2.3)***
Urine test	98 (1.2)	164 (2.1)***
Weight measurement	77 (1.0)	118 (1.5)**
<i>Extended role tasks</i>		
Asthma check up	555 (7.0)	129 (1.7)***
Breast check	235 (3.0)	42 (0.5)***
Cervical smear	257 (3.3)	243 (3.2)
CHD prevention advice	1 (0)	0 (0)
Diabetes check	99 (1.3)	123 (1.6)
Elderly person screening	0 (0) ^a	96 (1.3)
Family planning advice/care	193 (2.5)	109 (1.4)***
Health education	61 (0.8)	89 (1.6)
Menopause/HRT advice	37 (0.5)	1 (0)
Pre-conception advice	9 (0.1)	2 (0)
Quit smoking	7 (0.1)	0 (0)
Travel check	639 (8.1)	558 (7.3)
Registration check	116 (1.5) ^b	426 (5.5)***
<i>Diagnosis and management tasks for:</i>		
Asthma (acute)	46 (0.6)	43 (0.6)
Athletes foot	7 (0.1)	2 (0)
Candidiasis	38 (0.5)	19 (0.2)
Constipation	1 (0)	1 (0)
Cough/cold	38 (0.5)	44 (0.6)
Cystitis	21 (0.3)	9 (0.1)
Diabetes (acute)	3 (0)	7 (0.1)
Diarrhoea and vomiting	3 (0)	8 (0.1)
Eye problem	117 (1.5)	75 (1.0)**
Hayfever	2 (0)	0 (0)
Infestations, lice	15 (0.2)	44 (0.6)***
Minor injury	261 (3.3)	243 (3.2)
Mole, skin tag	6 (0.1)	9 (0.1)
Musculoskeletal problem	14 (0.2)	49 (0.6)***
Nappy rash	2 (0)	1 (0)
Nose bleed	7 (0.1)	2 (0)
Skin rash	63 (0.8)	74 (1.0)
Wart	34 (0.4)	98 (1.3)***
Worms	4 (0.1)	4 (0.1)
Other	275 (3.5)	218 (2.8)
Activity code unknown	56 (0.7)	84 (1.1)

n = number of procedures. ECG = electrocardiograph. CHD = coronary heart disease. HRT = hormone replacement therapy. ^aService not offered by nurses in practice Y. ^bRegistration checks not offered by practice nurses in practice Y until last two months of study period. Comparison between practices Y and Z: ** $P<0.01$, *** $P<0.001$.

record consultations in greater detail could subdivide a code, for example, family planning might be subdivided into contraceptive pill, condom, diaphragm and other. Since this study was completed, nurses in practice Y have been recording all consultations on

the practice's computer (*EMIS*, Egton medical information system). Each consultation has been coded using the 45 codes of the activity index; these codes have been added to the Read code system.

A total of 13 898 consultations were documented. The proportion of unclassified consultations was small (1%) considering the pressure under which nurses work and that patients' notes often go missing temporarily. Nurses were consistent in their classifications, with only three of 320 random checks showing a deviation from the criteria set at the outset of the study. Only 3% of procedures were classified as 'other'.

Extended role tasks made up 28% of procedures in practice Y and 24% in practice Z. This finding is important in the light of the new contract for general practitioners.⁶ Adopting shared care with appropriately trained nurses can free general practitioners to deal with other essential work. For example, many women patients prefer to see a woman health professional to talk about sexual and reproductive health.⁴

It is likely that the annual nurse consultation rate of 0.8 per patient found in this study will be different in other practices, as is the general practitioner consultation rate. However, workload patterns in the two practices studied here were similar. Those differences found could be explained by differences in the nurses' skills and qualifications in the two practices. For example, all three nurses in practice Y had a certificate in family planning compared with one nurse in practice Z. It might also be explained by different management policies — practice Z placed greater emphasis on influenza immunization compared with practice Y.

Only 9% of nurse procedures were in the diagnosis and management tasks category, a finding similar to that of other studies.^{12,13} Patients who are used to seeing a doctor for a particular problem may not be willing to switch to seeing a nurse. Similarly, doctors who have a close relationship with their patients may find it difficult to delegate to a nurse. However, as with asthma care in practice Y, training and shared care can result in a successful switch. Here, asthma patients requiring follow up were seen by a practice nurse, general practitioners continuing to see patients for acute care when necessary.

This study did not assess the quality of nurse consultations. Both practices' grade G nurses regularly give, for example, incidental dietary advice to obese patients attending for blood pressure checks. This did not merit two coded entries unless the nurse fulfilled practice protocols for both problems. The added value of a grade G nurse carrying out tasks in the traditional treatment category has not been assessed.

General practitioners can see four times as many patients as can nurse practitioners in surgeries of the same length,¹³ nurse training is expensive, and practice nurses should not be seen as a cheap resource. In any practice with two or more nurses, there is scope for a variety of skills to be offered. Tasks in the traditional treatment category accounted for 61% of the total. It is therefore probable that up to 60% of practice nurses' work could be performed by a registered general nurse after appropriate inhouse training and support, but with some loss of quality. The following activity codes represented 30% of nurse activity in practice Y and 31% in practice Z: blood pressure measurement, blood testing, electrocardiograph recording, pregnancy testing, ear syringing, weight measurement and urine testing. It is therefore also probable that up to 30% of practice nurses' work could be performed by a health care assistant, again with some loss of quality. Nurses with extended training could benefit as they may find it unsatisfying to carry out simple traditional tasks.

The National Health Service Management Executive recognized the problem of training nurses in general practice.¹⁹ Jewell and Turton have suggested that the family health services authority should be responsible for practice nurse training, leaving indi-

vidual general practitioners to determine the skills mix appropriate to their practice.²⁰ For this to happen general practitioners must be able to assess their patients' demands. Skills mix can be an emotive term suggesting to managers the possibility of staff reductions.²¹ However, the present data and the findings of others²¹ suggest that there is scope to reallocate responsibilities within the primary health care team, and this offers the possibility of improved services and job satisfaction within a static budget. A rule of thumb might be that half of the nursing hours available from a practice should be offered by a nurse with extended training. The disadvantages of skills mix include the possibility of rivalry among nurses and difficulties with holiday cover. However, it would allow for expansion of high-skill work. Smaller practices might consider achieving skills mix by employing part-time nurses. In larger practices a health care assistant could be employed to undertake such tasks as phlebotomy and blood pressure measurement. As a result of this study, the two practices involved decided, independently, to employ a health care assistant.

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Acknowledgements

We thank the practice nurses in both practices for all their extra work, especially Nava Adams, Sharon Chin and Lynda Orpet. We also thank Ms Sharon Cee Tai for help with handling the data and some of the statistical analysis; Ms Christine Donnelly for help in collecting data and word processing; and those at the Caversham practice, especially the practice manager and general practitioners.

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