Nurse management of patients with minor illnesses in general practice: multicentre, randomised controlled trial

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BMJ 2000;320:1038–43

Abstract

Objective To assess the acceptability and safety of a minor illness service led by practice nurses in general practice.
Design Multicentre, randomised controlled trial.
Setting 5 general practices in south east London and Kent representing semi-rural, suburban, and urban settings.
Participants 1815 patients requesting and offered same day appointments by receptionists.
Intervention Patients were assigned to treatment by either a specially trained nurse or a general practitioner. Patients seen by a nurse were referred to a general practitioner when appropriate.
Main outcome measures The general satisfaction of the patients as measured by the consultation satisfaction questionnaire. Other outcome measures included the length of the consultation, number of prescriptions written, rates of referral to general practitioners, patient's reported health status, patient's anticipated behaviour in seeking health care in future, and number of patients who returned to the surgery, visits to accident and emergency, and out of hours calls to doctors.
Results Patients were very satisfied with both nurses and doctors, but they were significantly more satisfied with their consultations with nurses (mean (SD) score of satisfaction 78.6 (16.0) of 100 points for nurses *v* 76.4 (17.8) for doctors; 95% confidence interval for difference between means −4.07 to −0.38). Consultations with nurses took about 10 minutes compared with about 8 minutes for consultations with doctors. Nurses and doctors wrote prescriptions for a similar proportion of patients (nurses 481/736 (65.4%) *v* doctors 518/816 (63.5%)). 577/790 (73%) patients seen by nurses were managed without any input from doctors.
Conclusion Practice nurses seem to offer an effective service for patients with minor illnesses who request same day appointments.

Introduction

The role of nurses in primary care has changed recently and is set to evolve further with the development of services such as NHS Direct, the telephone helpline staffed by nurses to advise callers on the most appropriate health care.[1] Nurses' roles have expanded into those of nurse specialists (who are usually trained to carry out specific roles in the assessment and management of patients with specific conditions such as diabetes or asthma), nurse practitioners (who are usually trained to manage more diverse conditions), and those who are managing the care of patients with chronic diseases. Recently, there has been discussion of nurses managing patients with undifferentiated minor medical problems. Not only is this likely to be important in the NHS in the future but it might also be welcomed by nurses keen to develop new skills and general practitioners concerned about their own increasing workload.

Our aim was to assess in a multicentre, randomised controlled trial the acceptability and effectiveness of a practice based minor illness service led by nurses and to compare it with the routine care offered by general practitioners. We specifically looked at practice nurses rather than nurse practitioners because comparatively little research has been done on the role of practice nurses. A search of Medline, CINAHL, Embase, and the Social Science Citation Index found just two British studies evaluating the management by practice nurses of minor illnesses in primary care.[2,3] Although the results of these studies generally supported nurse management, the studies were confined to single practices, focused on process measures, used informal indicators of patient satisfaction, and were not randomised controlled trials.

Participants and methods

Nurses and general practitioners

Five general practices in London and Kent participated in the study. The two practices in south east London serve a mostly urban area with a culturally diverse population that is often transient, which results in a high turnover of patients. The practices in Kent serve some densely populated and some semi-rural areas; many people commute from the area to London. One nurse from each practice took part, and 19 general practitioners acted as controls. The average age of the nurses was 36.2 (SD 5.6) years, with an average of 8.4 (3.8) years of experience in practice nursing. Three nurses had no experience of seeing patients with minor illnesses; one had a little experience, seeing these patients irregularly; and one ran open surgeries in which patients with routine, non-urgent problems (such as blood pressure checks or vaccinations) as well

as those with minor illnesses were seen. None of the nurses had had specific training in treating patients with minor illnesses.

We developed an academically accredited degree level course on managing minor illnesses; it took three months of part time attendance to complete. Nurses attended one half day a week of formal group teaching by a nurse practitioner and were taught twice a week by general practitioners during routine surgeries in the practice where the nurse worked. Management protocols were not used.

Recruitment and exclusion criteria

There was a two month pilot period after the nurses were trained; this was followed by 18 consecutive weeks of recruitment of patients between November 1998 and March 1999.

The process of recruitment is shown in figure 1. No attempt was made to define medical conditions for inclusion, only for exclusion. Patients who requested and were given a same day appointment by receptionists were briefly informed about the study over the telephone. On arrival at reception, patients were shown a card that listed reasons for not participating in the study. Patients were excluded if they were <1 year old; if they had problems with their pregnancy; if they had severe chest pain, severe abdominal pain, or severe difficulty breathing; if they were vomiting blood or having fits or blackouts; or if they presented with psychiatric problems. Additional information about the study, which described the procedures, was also given. Temporary residents and those with literacy or language difficulties were also excluded. Patients who declined to participate and those who were excluded saw a doctor.

Ethical approval was obtained from the local research ethics committees. Patients gave written consent to be randomly allocated into the trial, and the consent form was used to collect the patient's name, date of birth, sex, and address.

Allocation to being seen by a doctor or nurse was determined using random permuted blocks of four, with sequentially numbered, non-resealable, opaque envelopes.

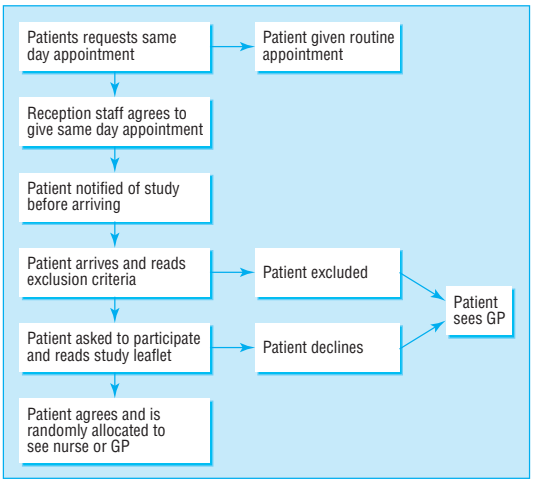

Fig 1 Process of recruiting patients

Intervention

Nurses managed the patient's care and took the history, performed a physical examination, offered advice and treatment, issued prescriptions (which required a doctor's signature), and referred the patient to the doctor when appropriate. The amount of time that nurses could spend on each consultation was not defined, but appointments were booked at 10 minute intervals. Nurses did not offer routine follow up unless they identified a nursing problem that needed review (for example, dressing a wound).

Outcome measures

The key outcome variable was the patient's general satisfaction as measured by the consultation satisfaction questionnaire.[4 5] Patients completed the questionnaire after the consultation and before leaving the surgery. Subscales on this questionnaire measure professional care, depth of relationship, and perceived time and were used as secondary outcomes. Responses to the questionnaire are indexed to a scale of 0-100; most scores will fall in the range of 60-80. Information collected from the doctor or nurse included the presenting complaint, the number of prescriptions written, the proportion of consultations for which advice was recorded by the doctor or nurse, the number of patients referred to the doctor (for nurses), and the length of the consultation (excluding the time it took nurses to find a doctor to advise them or to sign a prescription). Another questionnaire was sent to the patient two weeks after the consultation and if necessary two reminders were sent one week apart. This questionnaire measured the patient's reported health status, the patient's reported compliance with drug treatment, the rating of the quality of explanation and advice given, whether the patient had returned to the surgery, and the patient's anticipated behaviour in seeking health care for the same condition. Self reported health status was measured using the scale developed by Murphy et al.[6] Data on critical events, attendance at accident and emergency departments, and out of hours calls were collected from the medical records of those who did not respond to the postal questionnaire.

Data analysis

It was calculated that 1060 valid responses would be sufficient to detect an effect size of 0.2 SD (4 points on the satisfaction scale of 0-100) at the 95% confidence level with a power of 90% using two tailed tests.

Analysis was done on an intention to treat basis. Two tailed significance tests were used: χ^2 for categorical variables, the Student's t test for continuous variables that met the requirements for parametric tests, and the Mann-Whitney U test for variables that did not.

Results

Study participants

A total of 1815 of 2021 eligible patients (90%) entered the trial (fig 2). Altogether, 1713 of 1815 patients (94%) who were randomly allocated received the allocated intervention. For 78 patients (4%) it was not possible to confirm which intervention had been received because

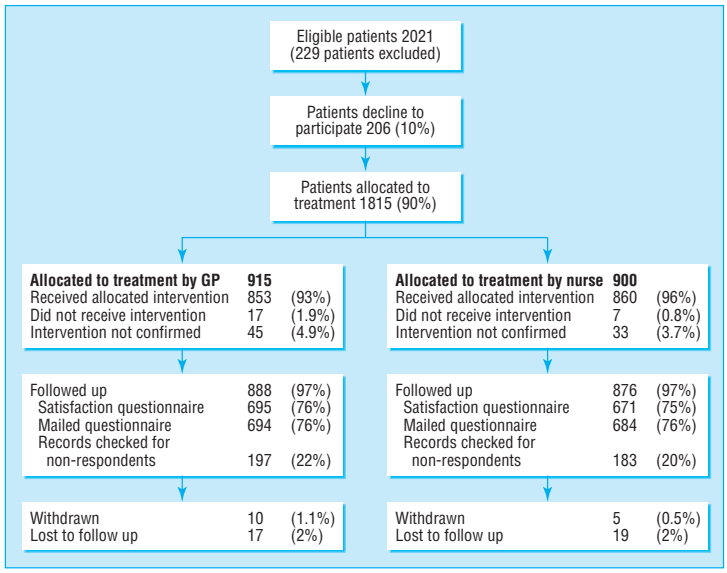

Fig 2 Allocation of patients to treatment and follow up of patients after treatment

Table 1 Patients' characteristics and presenting conditions. Values are numbers (percentages) unless indicated otherwise

	Treatment by	
	General practitioner	Nurse
Age:		
No of respondents	904	888
Median (interquartile range) age (years)	29.1 (9.7-44.9)	26.0 (9.0-41.7)
Men	363/914 (39.7)	360/899 (40.0)
Patients who usually prefer to see woman doctor for current problem	62/657 (9.4)	69/668 (10.3)
Consultations in past 12 months:		
No of respondents	633	636
Mean (SD) No consultations	4.9 (3.85)	4.6 (3.54)
Presenting condition or request as assessed by practitioner:	(n=862)	(n=846)
Respiratory infection	452 (52.4)	407 (48.1)
Musculoskeletal problems and injuries	116 (13.5)	110 (13.0)
Skin condition	82 (9.5)	93 (11.0)
Abdominal pain	40 (4.6)	38 (4.5)
Eye condition	31 (3.6)	39 (4.6)
Diarrhoea or vomiting	32 (3.7)	22 (2.6)
Urinary infection	21 (2.4)	31 (3.7)
Gynaecological	20 (2.3)	20 (2.4)
Contraception	14 (1.6)	10 (1.2)
Other	162 (18.8)	220 (26.0)

the consultation form was not completed. The response rates to both the consultation satisfaction questionnaire and the postal questionnaire were over 75% (fig 2). Fifteen patients were withdrawn from the study after being randomly allocated because it became apparent that they were ineligible.

The two groups of patients—those seen by the nurses and those seen by the doctors—were comparable in terms of age, sex, the number who usually preferred to see a female doctor rather than a male, and their reported rates of consultation in the previous 12 months (table 1). The range of presenting conditions was broad, with no significant differences between the two groups (table 1).

Altogether 220 of 846 (26%) patients seen by nurses for whom data were available were classed as having "other" conditions compared with 162 of 862 (18.8%) of those seen by doctors for whom data were available. An overview of the "other" category identified more than 50 different types of problems, some of which were respiratory symptoms and could have been included under the heading "respiratory infections."

Variables measured for each visit

On average the nurses spent about two minutes longer on each consultation (mean 10.2 minutes for nurses *v* 8.3 minutes for doctors; 95% confidence interval of difference between means −2.43 to −1.28; $P<0.001$) (table 2). There was significant variation between individual nurses in the mean length of consultations (mean length 7.9, 8.9, 10.8, 11.7, and 12.8 minutes; $P<0.001$), showing that some nurses seemed to be as fast as doctors. Of the 790 patients seen by nurses for whom data were available 577 (73%) were managed without immediate referral to a doctor (except for having prescriptions signed); 153 of 790 (19%) had to be seen by a doctor. For the remaining 60 (8%) the nurses needed only to have a discussion with a doctor.

Nurses and doctors wrote prescriptions for a similar proportion of patients (nurses 481/736 (65.4%) *v* doctors 518/816 (63.5%)). However, nurses reported giving more advice on self medication and general self management than doctors. There was no difference between the two groups in the rate of advice given to return for routine review.

Patients' satisfaction and future behaviour

Generally patients expressed greater satisfaction with the nurses; this was statistically significant in the subscales of the questionnaire that measured general

Table 2 Variables measured for each visit. Values are numbers (percentages) unless indicated otherwise

	Treatment by		
	General practitioner	Nurse	Significance
Length of consultation:			
No of responses	849	851	
Mean (SD) length (minutes)	8.3 (6.4)	10.2 (5.7)	$t=-6.346$, P<0.00, 95% CI difference between means −2.43 to −1.28
No (%) prescriptions written	518/816 (63.5)	481/736 (65.4)	$\chi^2=0.513$, P=0.474
Patient given advice about self medication	119/871 (13.7)	193/868 (22.2)	$\chi^2=21.123$, P<0.001
Patient given advice about general self management	502/871 (57.6)	709/868 (81.7)	$\chi^2=117.766$, P<0.001
Patient's care managed totally by allocated professional	576/582 (99.0)	577/790 (73.0)	NA
Patient referred to and seen by doctor at same visit	3/582 (0.5)	153/790 (19.4)	NA
Patient asked by nurse or GP to make routine appointment to see doctor	79/582 (13.6)	92/790 (11.6)	$\chi^2=0.972$, P=0.324

NA=not applicable.

satisfaction, professional care, and perceived time (table 3). Linear regression showed that longer consultations were significantly related to the same three satisfaction subscales (general satisfaction SE = 0.028, P = 0.046; professional care SE = 0.028, P = 0.049; perceived time SE = 0.028, P < 0.001). However, multiple linear regression analysis showed that a significant relation between the patient's allocation and scores of satisfaction remained after adjusting for time spent in the consultation, although it was slightly weakened (general satisfaction SE = 0.029, P = 0.047; professional care SE = 0.028, P = 0.004; perceived time SE = 0.028, P < 0.001). Being referred to the doctor seemed to have an adverse effect on satisfaction. The mean score of general satisfaction for patients who were seen by a nurse and who then had to see a doctor was 71.7 out of 100 compared with 80.0 for those who did not have to see the doctor as well (P = 0.014, 95% confidence interval for difference between means −11.6 to −4.9). Satisfaction was not related to the sex of the doctor. Both groups of patients reported that they were very satisfied with the quality of advice and the explanations that they had been given about their condition.

There were differences between the two groups in which type of practitioner they would rather see if they had the same problem again. Among those seen by a doctor, 308/649 (47.5%) indicated that they would prefer to see a doctor again, 13/649 (2%) would prefer a nurse, and 328/649 (50.5%) indicated that they had no preference for who they saw. Among those seen by a nurse, 211/669 (31.5%) indicated that they would prefer to see a doctor next time, 50/669 (7.5%) wanted to see a nurse again, and 408/669 (61%) indicated that they had no preference ($\chi^2 = 48.268$, P < 0.001).

When asked what they were likely to do in future for episodes of the same illness, more than 91% (566/616) of those who had seen a doctor and 94% (590/629) of those who had seen a nurse said that they would again present to a health professional ($\chi^2 = 1.446$, P = 0.229). Of these, 94% (530/566) of those who had seen a doctor and 96% (567/590) of those who had seen a nurse said that they would again present at the same stage of their illness or earlier (P = 0.091).

Clinical outcome

There was no difference between the groups in patients' ratings of their health status in terms of clinical improvement after two weeks (table 4). About 20% of the patients in each group returned to the surgery; there was an average of two further consultations among those who returned. About 2% of the patients in each group attended an accident and emergency department. The study did not have enough power to detect differences in rare outcomes such as visits to accident and emergency departments or calls to out of hours services. Critical events identified from the responses to the postal questionnaire and analysis of the medical records of patients who did not return these questionnaires found that two deaths unrelated to the presenting problem had occurred among those who had seen a doctor; that there had been five visits to accident and emergency in each group; that one patient who had been seen by a nurse had been admitted to hospital as had three patients seen by a doctor; and that seven out of hours calls had been made by those who had seen a nurse and 10 by those who had seen a doctor.

Table 3 Patients' satisfaction with their visit as measured by consultation satisfaction questionnaire

	Treatment by		
	General practitioner	Nurse	Significance
Consultation satisfaction questionnaire subscale*			
General satisfaction:			
No of respondents	657	635	
Mean (SD) score	76.4 (17.8)	78.6 (16.0)	*t*=−2.365, P=0.018, 95% CI difference between means −4.07 to −0.38
Professional care:			
No of respondents	628	662	
Mean (SD) score	76.7 (15.1)	79.2 (13.4)	*t*=−3.153, P=0.002, 95% CI difference between means −4.07 to −0.95
Depth of relation:			
No of respondents	644	618	
Mean (SD) score	64.2 (16.9)	64.3 (15.7)	*t*=−0.070, P=0.945, 95% CI difference between means −1.86 to 1.73
Perceived time :			
No of respondents	666	645	
Mean (SD) score	67.7 (19.3)	73.3 (16.9)	*t*=−5.597, P<0.001, 95% CI difference between means −7.58 to −3.65
No (%) patients rated explanation as helpful	587/662 (87.3)	596/671 (88.8)	χ^2=2.050, P=0.359
No (%) patients rated advice as helpful	557/664 (83.9)	582/670 (86.9)	χ^2=5.628, P=0.060
No (%) who expressed preference for type of practitioner if returned with same problem			
Prefer to see GP	308/649 (47.5)	211/669 (31.5)	χ^2=48.268, P<0.001
Prefer to see nurse	13/649 (2.0)	50/669 (7.5)	
No preference	328/649 (50.5)	408/669 (61.0)	

*Responses are indexed to provide scores from 0 to 100; most responses are expected to fall within the range of 60-80.

Discussion

Satisfaction

In terms of satisfaction patients rated their visits with nurses more highly than their visits with doctors in three of four subscales of the questionnaire. Scores of satisfaction with the nurses were between 2 and 6 points higher than those for general practitioners.

Table 4 Comparison of clinical outcomes of patients seen by nurses and general practitioners. Values are numbers (percentages) unless indicated otherwise

	Treatment by		
	General practitioner	Nurse	Significance
Patient's reported health status after two weeks:			
No of respondents	661	672	
Cured	330 (49.9)	338 (50.3)	P=0.906
Improved	216 (32.7)	220 (32.7)	
Same	100 (15.1)	92 (13.7)	
Worse	15 (2.3)	22 (3.3)	
Patients reporting return to surgery for same problem	119/654 (18.2)	136/666 (20.4)	χ^2=0.910, P=0.340
No of visits for patients who returned to surgery:			
No of respondents	89	89	
Mean (SD) No of visits	2.0 (1.61)	2.0 (1.75)	*t* =−0.089, P=0.929, 95% CI difference between means −0.52 to 0.48
Patients reporting attendance at accident and emergency	13/664 (2.0)	14/675 (2.1)	χ^2<0.00, P>0.999
Patients reporting out of hours calls to general practitioner	12/664 (1.8)	6/675 (0.9)	χ^2=1.518, P=0.218

Although this was significant, the practical importance of such a small difference is uncertain. There was a relation between the length of the consultation and the patient's satisfaction, but differences in satisfaction with nurses and general practitioners remained significant when this was accounted for. The lower ratings of satisfaction among patients referred by a nurse to a general practitioner may reflect the additional time patients spent waiting to see a doctor, the inconvenience of being seen twice, or, possibly, conflicts in the opinions of the nurse and the doctor.

Among those who had seen a doctor, more than half reported that they had no preference as to whether they saw a doctor or nurse if they had the same problem in the future. Among those who had seen a nurse about 8% reported that they would prefer to see a nurse again and about 60% had no preference. This suggests that the experience of having had a consultation with a nurse increased the acceptability of this service, although nearly one third of patients in this group still expressed a preference for a doctor.

Although the information provided by nurses indicated that they gave more advice regarding management of the patient's condition, patients did not report that they anticipated a reduction in their likelihood of consulting again for similar problems.

The visit and clinical outcome

Nurses spent about two minutes longer with each patient than doctors did. Although this was significant, we felt that it was not a large difference in real terms, particularly as the role was still comparatively new for the nurses. The extra time spent may also have been because the nurses had a different style of consulting.

None of the measures detected any difference in outcome. Reanalysis of our data showed that our sample size would have enabled us to detect an increase of from 15% to 21% in the proportion of patients who rated their health status as the same or worse, with a power of 80% at the 5% level of significance using a two tailed test.

Limitations of the study

This study did not examine the content of the consultations in detail. Although we assessed several aspects of clinical outcome, the study did not have enough power to detect differences in rare outcomes. We are thus not able to make any definitive statements about the absolute safety of a service led by nurses in comparison with care offered by general practitioners; however, patients' ratings of their health after the visit suggest that the nurses' service was clinically effective.

The nurses in our study were fairly typical of practice nurses who have had a reasonable amount of clinical experience. However, they may have been more motivated than other nurses because they agreed to participate in the trial. Also, it is possible that the doctors in the study may have put extra effort into their consultations because they were aware that patients would be rating the consultation and that their work would be compared with that of the nurses. We did not study patients' long term behaviour in seeking health care or actual consultation rates to see if the service encouraged patients to present because it offered easier access to care. However, there is no evidence that this service encourages more consultations.[7]

What is already known on this topic

Most patients requesting same day appointments are willing to see a nurse

Studies suggest that nurses can manage the care of most of these patients without the help of a doctor

What this study adds

This multicentre, randomised controlled trial assessed the acceptability and safety of a minor illness service led by nurses

In this study patients were more satisfied with their consultations with nurses than their consultations with doctors

Clinical outcomes were similar among patients seen by nurses and those seen by doctors

Other studies

Marsh and Dawes studied a practice nurse working in a similar role; the nurse was trained by sitting in on surgeries three times a week for one year.[2] After this, an unspecified run-in period was implemented until the nurse could perform consultations in 10 minutes. In a study by Rees and Kinnersley, the nurse was not trained but a nurse from outside the practice who was also an author of the paper participated.[3] It is not clear how much experience she had in managing minor illnesses. The average length of her consultation was 15 minutes.

In the Rees and Kinnersley study patients were referred to the nurse only if their symptoms matched those on a list. Thus, the nurse saw more patients with respiratory and ear, nose, and throat problems than any other type of problem. In the Marsh and Dawes study, the nurse was specifically instructed to treat only the presenting problem and to ask patients to make an appointment for other problems that she thought were not minor. In this study nurses were not restricted in terms of which or how many conditions they could treat with the exception of the acute problems listed as exclusions.

In the earlier studies the nurses seemed to refer fewer patients to doctors; between 86% and 95% of the patients were managed by the nurse alone. This might have been partly due to the longer training offered in the other studies, the nurses being told to deal only with acute minor problems, or the higher percentage of patients seen with respiratory and ear, nose, and throat problems. In our study, the nurses managed 85% of patients with respiratory and ear, nose, and throat problems without referring them to a doctor.

Conclusions

These results suggest that a same day appointment service led by a practice nurse is acceptable to most patients; in this study some satisfaction ratings were significantly higher for the nurses than for the doctors. Our findings suggest that nurses are able to offer a clinically effective service, although uncertainty remains regarding rare clinical outcomes. The slightly longer time spent on consultations is potentially a

cause for concern. Reviewing the service after the nurses have more experience running it and estimating the real cost effectiveness outside the artificial restrictions of a trial would be useful. It would also be interesting to study the longer term effects of the nurses' service on patients' attitudes to their illnesses and behaviour in seeking health care.

Various members of the South Thames Research Network provided invaluable support during all stages of this study, in particular Dr Sarah Clement. The network is funded by the South East and London regions of the NHS Executive. Statistical analysis was supervised by Dr Pak Sham. Thanks are also owed to the staff of the five practices, to the nurses who volunteered to participate in the study, and to the patients who took part.

Contributors: CS initiated and coordinated the formulation of the hypothesis, discussed core ideas, designed the study protocol and questionnaires, analysed the data, acted as overall coordinator for the trial, and participated in writing the paper. CS is guarantor for the paper. AH helped formulate the core ideas and the study protocol, participated in data collection, and contributed to writing the paper. DW helped formulate the core ideas and study protocol and participated in writing the paper. MAC helped formulate the hypothesis and protocol and participated in writing the paper. SK participated in collecting the data and coordinating the day to day running of the study. SC helped formulate the hypothesis and core ideas, designed the protocol for data analysis, and participated in writing the paper.

Funding: This project was funded by the project grant scheme of the South Thames region of the NHS Executive.

Competing interests: None declared.

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(Accepted 15 March 2000)

Randomised controlled trial of nurse practitioner versus general practitioner care for patients requesting "same day" consultations in primary care

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Abstract

Objective To ascertain any differences between care from nurse practitioners and that from general practitioners for patients seeking "same day" consultations in primary care.

Design Randomised controlled trial with patients allocated by one of two randomisation schemes (by day or within day).

Setting 10 general practices in south Wales and south west England.

Subjects 1368 patients requesting same day consultations.

Main outcome measures Patient satisfaction, resolution of symptoms and concerns, care provided (prescriptions, investigations, referrals, recall, and length of consultation), information provided to patients, and patients' intentions for seeking care in the future.

Results Generally patients consulting nurse practitioners were significantly more satisfied with their care, although for adults this difference was not observed in all practices. For children, the mean difference between general and nurse practitioner in percentage satisfaction score was –4.8 (95% confidence interval –6.8 to –2.8), and for adults the differences ranged from –8.8 (–13.6 to –3.9) to 3.8 (–3.3 to 10.8) across the practices. Resolution of symptoms and concerns did not differ between the two groups (odds ratio 1.2 (95% confidence interval 0.8 to 1.8) for symptoms and 1.03 (0.8 to 1.4) for concerns). The number of prescriptions issued, investigations ordered, referrals to secondary care, and reattendances were similar between the two groups. However, patients managed by nurse practitioners reported receiving significantly more information about their illnesses and, in all but one practice, their consultations were significantly longer.

Conclusion This study supports the wider acceptance of the role of nurse practitioners in providing care to patients requesting same day consultations.

Introduction

General practices need to provide care for patients who request "same day" consultations because they are too ill or otherwise unable to wait for an appointment. The numbers of these "extra" patients are difficult to predict and increasing.[1] They are normally seen by general practitioners, although recently nurse practitioners have taken on this work.[2–4] The Royal College of Nursing has developed training for nurse practitioners, although there is no requirement for nurses seeing these patients to hold specific qualifications.

Previous studies of nurse practitioners have found high levels of patient satisfaction, low levels of prescribing, and little need to refer patients to general practitioners.[4 5] However, these studies were observa-

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BMJ 2000;320:1043–8

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