Randomised controlled trial to compare GP-run orthopaedic clinics based in hospital outpatient departments and general practices

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ABSTRACT

Background
To reduce outpatient waiting times, a growing number of outpatient clinics for selected groups of patients are being provided by GPs with special interests (GPwSIs).

Aim
To determine whether there are differences in patient satisfaction or clinical outcome among patients attending orthopaedic clinics provided by GPwSIs in hospital or community settings.

Design of study
Randomised controlled trial.

Setting
Hospital outpatient departments or general practices.

Method
Three hundred and twenty-one patients with minor orthopaedic problems were referred by GPs to the orthopaedic surgery department of the University Hospitals of Leicester NHS Trust; 168 patients were randomised to care by GPwSIs in practices, and 153 were randomised to care by the same GPwSIs in clinics held at hospital outpatient departments. Patients completed the SF-36v2 and satisfaction questionnaires at their first appointment, and again 3 months later.

Results
There was no significant difference between the sites in changes in health. After the first clinic attendance, patients attending practice-based clinics were more satisfied with access to appointments and information received.

Conclusion
For selected orthopaedic referrals seen by GPwSIs, there were no significant differences in clinical outcomes between practice-based and hospital-based clinics, but some features of practice-based clinics tend to be preferred by patients.

Keywords
orthopaedics; primary health care; referral and consultation.

INTRODUCTION

The NHS Plan highlighted the potential role of GPs with special interests (GPwSIs) in the provision of more accessible services for patients and reduction of demand on secondary care.[1] GPwSIs are GPs who deliver a specific service or undertake advanced procedures beyond the normal scope of general practice. They have additional training and expertise that enables them to take referrals from colleagues for the assessment and/or treatment of patients who might otherwise have been referred to a secondary care consultant, or provide an enhanced service for particular patient groups.[2] It was intended that by 2006 'at least 1 million more outpatient appointments will take place in the community rather than hospital.'[3] Orthopaedics and trauma outpatient care is a priority since waiting times for first outpatient appointments in this speciality are longer than in other specialities.[4] A framework for the provision of care for musculoskeletal conditions by GPwSIs was commissioned by the Department of Health from the Royal College of General Practitioners, and it includes guidance on the core activities, required competencies, and accreditation of the GPwSIs.[5]

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Evidence about the benefits of providing specialist care by GPwSIs is limited. Outreach clinics in primary care run by hospital-based specialist teams of consultants lead to greater patient satisfaction than outpatient clinics although costs are higher, partially due to the costs of staff travel and time.[6,7] In a recent study, GPwSIs were included as one aspect of a quality improvement project that improved access to musculoskeletal services.[8] In setting up a GPwSIs service, access to appropriate premises is required, and may include new buildings, development of diagnostic or treatment centres, use of community hospitals, or use of general practice premises.[9] A service based in hospital outpatient departments may be more effective in dealing with patients' problems because of easy access to investigations such as radiology and proximity to specialists who can offer advice. Attendance at hospital may also be more acceptable to patients if they interpret this as access to better technical care. However, a service provided by the same doctors in general practices in the community may be more accessible to patients and more acceptable to those patients who prefer a less clinical setting. Consequently, we report a study of a service for patients with orthopaedic problems introduced by the two Leicester city primary care trusts and the University Hospitals of Leicester NHS Trust, and provided by GPwSIs in hospital outpatient departments and general practices in the community. The aim of the study was to determine whether there are differences in clinical outcome or patient satisfaction among patients attending the two settings.

METHOD

The study was a randomised trial that took place in two urban primary care trusts with a combined patient population of 235 090, and 62 GP practices. Participants were those patients aged 18 years or over referred to the orthopaedic departments of the NHS Trust and who met criteria indicating suitability for management by GPwSIs. The conditions included were low back pain, cervical, thoracic or coccygeal pain, and shoulder, elbow, wrist, hand, hip, knee, foot and ankle conditions, although the criteria excluded patients with features suggestive of serious problems (Box 1).

Referred patients meeting the criteria for management by GPwSIs were invited by letter to take part in the study. Those who agreed were randomly allocated an appointment at either a clinic

Box 1. Features excluding patients from the service.

- Age of onset <20 years
- Violent trauma, for example, road traffic accident or fall from significant height
- Non-mechanical pain — constant, progressive, not related to posture/activity, disturbed sleep, true sciatica which switches sides, pain not helped at all by simple analgesia
- Worse on lying down (spinal tumour)
- Past history of cancer
- Systemic steroids
- Drug abuse, HIV
- Systemically unwell (fever, malaise, rigors)
- Weight loss
- Persisting severe restriction of lumbar flexion
- Widespread neurology with or without upper motor neurone signs
- Structural deformity

How this fits in

Previous research on outreach clinics suggested that patients tend to prefer to see specialists in community rather than hospital settings. This study shows that selected patients experience similar clinical outcomes from attending both practice and hospital-based clinics run by GPs with special interests (GPwSIs), although they tend to prefer some of the features of practice-based clinics. The provision of outpatient services by GPwSIs could be extended by use of practice-based clinics.

Figure 1. Progress of patients through the study.

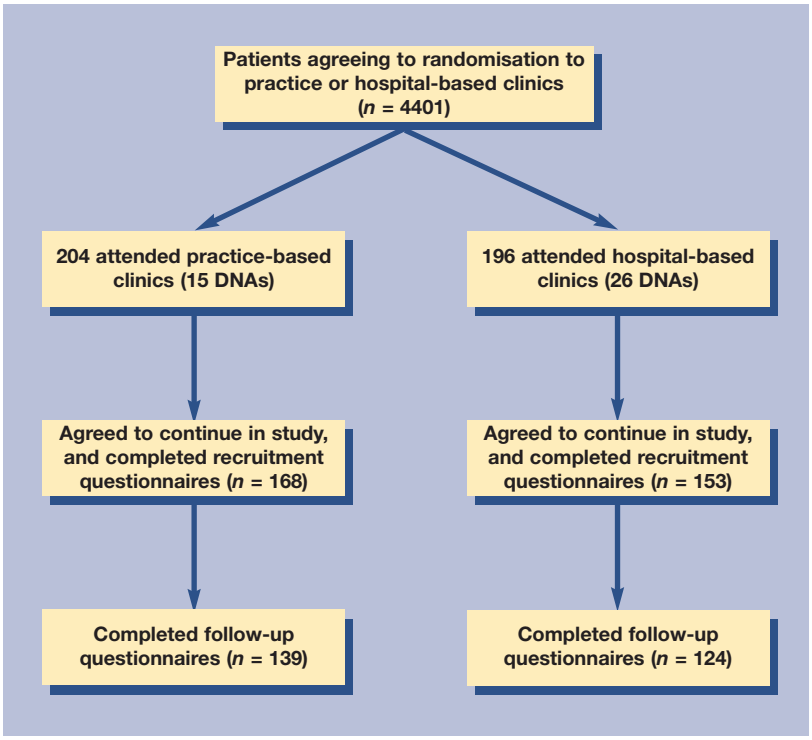

Table 1. Baseline characteristics of study subjects by intervention group (*n* = 321).

	Practice	Hospital	*P*-value
Number	168	153	
Median age (years) 25–75th quartiles	46.8 36.8–59.8	52.0 35.7–64.4	0.193[a]
Females (%)	80 (47.6)	81 (52.9)	0.372[b]
Principal orthopaedic problem (*n* [%: 95% CI])			
Spine	65 (38.7: 31.2 to 46.5)	43 (28.1: 21.1 to 35.9)	
Shoulder	12 (7.1: 3.7 to 12.1)	12 (7.8: 4.1 to 13.3)	
Upper limb	15 (8.9: 5.1 to 14.3)	12 (7.8: 4.1 to 13.3)	
Hip	4 (2.4: 0.7 to 6.0)	7 (4.6: 1.9 to 9.2)	0.452[b]
Knee	52 (31.0: 24.1 to 38.5)	61 (39.9: 32.1 to 48.1)	
Lower limb	16 (9.5: 5.5 to 15.0)	15 (9.8: 5.6 to 15.7)	
Other	4 (2.4: 0.7 to 6.0)	3 (2.0: 0.4 to 5.6)	

[a]*Mann-Whitney.* [b]χ^2.

Table 2. Management of patients attending the hospital and general practice based clinics (*n* = 321).

	Practice *n* (%: 95% CI)	Hospital *n* (%: 95% CI)	*P*-value[a]
Prescription	38 (22.6: 16.5 to 29.7)	43 (28.1: 21.1 to 35.9)	0.258
Manipulation	16 (9.5: 5.5 to 15.0)	8 (5.2: 2.3 to 10.0)	0.144
Injection	13 (7.7: 4.2 to 12.9)	9 (5.9: 2.7 to 10.9)	0.511
Blood tests	9 (5.4: 2.5 to 9.9)	3 (2.0: 0.4 to 5.6)	0.109
X-ray	19 (11.3: 6.9 to 17.1)	27 (17.6: 12.0 to 24.6)	0.106
Referral			
Orthopaedic specialist	4 (2.4: 0.7 to 6.0)	7 (4.6: 1.9 to 9.2)	0.533
Physiotherapy	37 (22.0: 16.0 to 29.1)	40 (26.1: 19.4 to 33.9)	
Other	17 (10.1: 6.0 to 15.7)	13 (8.5: 4.6 to 14.1)	
No referral	110 (65.5: 57.8 to 72.6)	93 (60.8: 52.6 to 58.6)	

[a]χ^2.

in hospital or in one of four local general practices. Randomisation was undertaken in the appointment booking office by the booking clerk using numbered sealed envelopes containing the study group allocation determined with a table of random numbers.[10] This method was chosen to minimise delay in offering appointments to participating patients.

At the first consultation for each patient, the GPwSI recorded baseline data, including information about the principal musculoskeletal problem, management including investigations and onward referral. To investigate reported symptoms, we used the SF-36v2 Health Survey,[11,12] which has been shown to be responsive to change in health in subjects with musculoskeletal disorders.[13] Three additional questions were included, one worded 'In the past 4 weeks, has your sleep been affected by the condition for which you were referred?', and the other two being 10-point visual analogue scales addressing pain and interference with normal abilities experienced in the previous 4 weeks. Patients completed SF36v2 and the additional questions before their appointment, and again 3 months later.

Patient satisfaction with the service was assessed by sections of the patient career diary, an instrument designed to measure patients' attitudes to care across the interface between primary and secondary care.[14] We asked patients to complete the section for the first specialist clinic immediately after their first consultation with the GPwSIs. This section has five scales (coordination or limbo, getting an appointment, organisation of the clinic, information and seeing the right doctor). Coordination or limbo measures the responder's perceptions of the extent to which elements of care such as referral, organisation of tests and information about the results, and delay between appointments were coordinated, limbo being the confusion, anxiety and powerlessness felt when coordination breaks down. The scale seeing the right doctor included three questions: 'I saw the doctor that I needed to see', 'It was difficult to get to see the doctor of my choice', and 'I had to see the GP specialist when I wanted to see the consultant doctor'. Additional questions were included dealing with access to the clinic, access to treatment and equipment, and whether the patient would be happy to attend the clinic again. Three months after the initial consultation, all patients were asked to complete a modified version of the section for other outpatient visits, which included scales dealing with the organisation of the clinic and satisfaction with treatment. Additional questions were included asking patients whether they would have preferred to consult a specialist rather than a GPwSI, and whether they would be happy to use the clinic again in the future. All the satisfaction questions were in a 5-point strongly agree to strongly disagree format. Both the SF36v2 and the patient career diary questionnaires completed 3 months after the first consultation were mailed to patients, with up to two reminders being sent to non-responders.

The patient career diary has been used previously to identify significant differences between types of service.[15] With a mean of 70 for a career diary scale score among patients attending hospital-based clinics, and a standard deviation of 18 in each group, it was calculated that 106 patients would be needed per group to detect a difference between study groups of eight scale points with 90% power and $P<0.05$.[16] Non-parametric tests were used to

Table 3. Clinical symptoms of patients attending practice and hospital clinics at the first consultation and follow up at 3 months.

	First consultation		3 months		
	Practice	Hospital	Practice	Hospital	
	Median 25–75th centiles	Median 25–75th centiles	Median 25–75th centiles	Median 25–75th centiles	adjusted *P*-value[a]
SF36					
Physical function	55.0 30.0–75.0	50.0 30.0–70.0	65.0 37.5–80.0	57.5 35.0–80.0	0.640
Role limitations (physical)	43.8 25.0–75.0	43.8 25.0–68.8	53.1 25.0–76.6	50.0 31.3–75.0	0.600
Role limitations (emotional)	58.3 33.3–91.7	66.7 41.7–100	75.0 41.7–100	66.7 50.0–100.0	0.664
Social function	50.0 25.0–75.0	50.0 37.5–87.5	62.5 37.5–100.0	62.5 40.6–87.5	0.184
Pain	33.3 22.2–44.4	22.2 22.2–44.4	44.4 22.2–66.7	44.4 22.2–63.9	0.101
General health	60.0 25.0–60.0	60.0 25.0 –60.0	60.0 25.0–60.0	60.0 25.0–60.0	0.616
Change in health	25.0 25.0–25.0	25.0 25.0–25.0	50.0 25.0–50.0	50.0 25.0–50.0	0.765
Sleep	50.0 25.0–75.0	50.0 25.0–75.0	75.0 25.0–100.0	75.0 50.0–75.0	0.904
Pain in past 4 weeks	3.0 1.5–5.0	3.0 2.0–4.5	5.0 3.0–7.0	4.5 3.0–7.0	0.884
Abilities affected past 4 weeks	4.0 2.0–6.0	4.0 2.0–6.0	5.0 3.5–8.0	5.0 3.0–7.0	0.695

[a]*Difference in scores at 3 months between the two treatment arms, adjusted for baseline scores.*

investigate the characteristics of the study groups, and the responses to SF36 and the career diary. In investigating differences between study groups in symptoms and satisfaction scores, we used STATA version 8.2 to estimate multilevel regression models to account for clustering by doctor.[17] We adjusted for baseline score in comparing SF36 scores at 3 months after the first appointment, and for waiting time for first appointments for the patient career diary scores after the first appointment and at 3 months to account for differences in waiting times between the two study groups.

RESULTS

Three hundred and twenty-one patients attended the clinic to which they had been invited, completed the baseline questionnaires and agreed to continue in the study. Two hundred and sixty-three patients went on to return all four questionnaires, 82% of those had completed the first data collection. There were no differences between the patients in the two groups for age, sex or the principal orthopaedic problem for which they had been referred (Table 1). Patients referred to the practice-based clinics had a shorter wait for the appointment of 43 days (interquartile range [IQR] = 34–58 days) in comparison with 51 days (IQR = 40–69 days), (Mann-Whitney test $P = 0.001$).

Most patients visited the clinic once only, 69.2% of those attending the practice clinics and 69.4% of those attending the hospital clinics. Similar proportions of patients in each clinic received a prescription, an injection or manipulation or had a blood test (Table 2). There were no significant differences between the two sites in the proportions of patients referred to a specialist or physiotherapist.

Clinical improvements were reported by both groups of patients, with no differences between groups in SF36v2 scores, or in the additional questions about sleep, pain or impact on abilities identified in the multilevel regression analyses (Table 3). Patients attending the general practice clinics reported significantly higher levels of satisfaction with access to appointments and information received (Table 4). There were no significant differences detected in the regression analyses in satisfaction with other features of the clinics, including no differences in the availability of equipment or treatments.

Table 4. Patient satisfaction after the first consultation and 3 months later.

	Initial consultation				
	Practice clinics		Hospital clinics		adjusted *P*-value[a]
	Median	25th–75th centiles	Median	25th–75th centiles	
Coordination/limbo	41.7	25.0-50.0	41.7	25.0-52.1	0.667
Getting an appointment	75.0	66.7-75.0	66.7	50.0-75.0	0.024
Organisation	75.0	68.8-87.5	75.0	68.8-87.5	0.746
Seeing the right doctor	75.0	66.7-91.7	75.0	58.3-83.3	0.066
Information	75.0	65.6-85.9	71.9	59.4-81.3	0.031
Access	75.0	75.0-75.0	75.0	75.0-75.0	0.623
Clinic easy to get to	4.0	4.0-4.0	4.0	4.0-4.0	0.636
Did not cost too much to get to clinic	4.0	4.0-4.0	4.0	4.0-4.0	0.630
Access to treatment and equipment	4.0	3.0-4.0	4.0	3.0-4.0	0.310
All equipment available	4.0	3.0-4.0	4.0	3.0-4.0	0.995
Would attend again	4.0	4.0-5.0	4.0	4.0-5.0	0.774
	3-month follow up				
Organisation	64.3	58.0-71.4	64.3	58.0-71.4	0.062
Treatment satisfaction	65.0	45.0-75.0	60.0	45.0-70.0	0.405
Would have preferred to see specialist	3.0	3.0-4.0	4.0	3.0-4.0	0.918
Would use the clinic again	4.0	4.0-5.0	4.0	4.0-5.0	0.537

[a]*Adjusted for waiting time for appointment.*

DISCUSSION

Summary of main findings

Services provided by GPwSIs for selected groups of patients are increasingly being introduced to reduce delays in access to outpatient care and provide services closer to home. The findings of this study provide reassurance about patients' reactions to a GPwSIs service for people with musculoskeletal disorders provided from general practice premises. There was no difference in clinical outcome between patients attending services in hospital or general practice settings, the proportions referred were similar, and patients reported that access to treatment was as good in general practice clinics as in hospital. The use of investigations was also similar, although the study may not have been large enough to rule out the possibility of a difference in use of X-rays. Patients reported higher levels of satisfaction with aspects of care at the general practice clinics, even after adjustment for the shorter waiting time at general practice clinics.

Strengths and limitations of the study

This randomised controlled trial is the only study we have been able to identify that has compared GPwSI services delivered in different locations and the findings are important in deciding whether a greater proportion of outpatient care should be provided in community settings rather than hospitals. However, the limitations of this study should be noted. Forty-one patients allocated appointments (9.3% of those agreeing to randomisation) failed to attend, and others opted not to take part when attending their first consultation. Since a comparison group of patients attending a consultant-led clinic was not included, it is not possible to draw any conclusions about the effectiveness of GPwSIs in comparison with consultants. A sealed envelope system was used in the randomisation procedure, but although this approach can be at risk of tampering, the process was undertaken by non-clinical staff distant from patients and we were not aware of any randomisation errors. The study does not provide information about the role of GPwSIs services in improving access to care, although it should be noted that during the course of the study, the waiting period for appointments with a consultant orthopaedic surgeon increased from 17 weeks in 2000 to 19 weeks in 2003, the wait for appointments with the GPwSIs increasing from zero to 13 weeks over the same period. The GPwSI service does not appear, therefore, to have reduced waiting times for the consultant service, although we cannot rule out the possibility that a steeper increase in waiting times has been averted.

The study only included patients who had agreed to attend a consultation with a GPwSIs, and therefore the findings should not be assumed to apply to patients who have an initial preference to see a consultant. Also, the study included only patients with musculoskeletal problems, and the findings should not be generalised to patients with other conditions for whom GPwSIs services are being developed, for example those with dermatological, respiratory or cardiac conditions. We have not been able to include information about the costs of care in the two settings. Differences in health service costs are likely to be limited to accommodation costs, which would be subject to the contract drawn up between the primary care trusts and the hospitals or general practices involved. There may also be differences in the costs incurred by patients attending the different clinics.

Comparison with existing literature

There is very little evidence about the effectiveness of GPwSI services, but our findings are compatible with findings that consultant outreach clinics are associated with greater patient satisfaction than hospital clinics.[6,7]

Implications for future research and clinical practice

Further research is needed before judgements about the cost-effectiveness of GPwSI services and the range of patients who are suitable for such care can be made. Nevertheless, the study does provide encouragement to greater use of general practice premises for such services. The ready availability of general practice accommodation in most areas could facilitate the rapid expansion of outpatient care delivered by GPwSIs or outreach specialists to selected groups of patients.

Funding body

Eastern Leicester Primary Care Trust

Ethics committee

Leicestershire Research Ethics Committee (6302)

Conflict of interest

Stephen Longworth is a GPwSIs. Rachel Cox was a member of staff of Eastern Leicester Primary Care Trust at the time of the study. We have no other competing interests to declare

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