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Evaluation of a general practitioner with special interest service for dermatology: randomised controlled trial

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Abstract

Objective To assess the effectiveness, accessibility, and acceptability of a general practitioner with special interest service for skin problems compared with a hospital dermatology clinic.

Design Randomised controlled trial.

Setting General practitioner with special interest dermatology service and hospital dermatology clinic.

Participants Adults referred to a hospital dermatology clinic and assessed by a consultant or the general practitioner with special interest service,. Suitable patients had non-urgent skin problems and had been identified from the referral letter as suitable for management by a general practitioner with special interest.

Interventions Participants were randomised in 2:1 ratio to receive management by a general practitioner with special interest or usual hospital outpatient care.

Main outcome measures Primary outcomes were disease related quality of life (dermatology life quality index) and improvement in patients' perception of access to services, assessed nine months after randomisation. Secondary outcomes were patient satisfaction, preference for site of care, proportion of failed appointments, and waiting times to first appointment.

Results 49% of the participants were judged suitable for care by the general practitioner with special interest service. Of 768 patients eligible, 556 (72.4%) were randomised (354 to general practitioner with special interest, 202 to hospital outpatient care). After nine months, 422 (76%) were followed up. No noticeable differences were found between the groups in clinical outcome (median dermatology life quality index score = 1 both arms, ratio of geometric means 0.99, 95% confidence interval 0.85 to 1.15). The general practitioner with special interest service was more accessible (difference between means on access scale 14, 11 to 19) and waited a mean of 40 (35 to 46) days less. Patients expressed slightly greater satisfaction with consultations with a general practitioner with special interest (difference in mean satisfaction score 4, 1 to 7), and at baseline and after nine months 61% said they preferred care at the service.

Conclusions The general practitioner with special interest service for dermatology was more accessible and preferred by patients than hospital outpatient care, achieving similar clinical outcomes.

Trial registration ISRCTN31962758.

Introduction

The concept of the general practitioner with special interests was promoted in the NHS Plan.[1] In this model general practitioners refer patients to a local general practitioner with special interest rather than to a hospital based specialist. Factors driving this initiative include the need to increase service capacity in the face of rising demand for specialist advice, to reduce excessive waiting lists for outpatient appointments, and to improve the accessibility and convenience of care.[2] Diversion of appropriate cases to general practitioners with special interests may also allow consultants to concentrate on more complex cases. Although not providing the full breadth of services provided by consultants, within their defined role general practitioner with special interests should offer care with an equally high quality of process and outcomes.[3 4]

Many schemes for general practitioners with special interests have been established by primary care trusts in several clinical disciplines, but evidence is lacking on their costs and benefits. A general practitioner with special interest service for dermatology was established in Bristol in 2001. Dermatology represents one of the most common causes for consultation in primary care and for referral to secondary care. More general practitioners with special interests are operating in dermatology than in any other clinical specialty, with the exception of diabetes.[5]

We investigated the effectiveness, cost effectiveness, accessibility, and acceptability of the Bristol general practitioner with special interest dermatology service compared with usual hospital outpatient care. The findings from the economic evaluation are presented in an accompanying paper.[6]

Methods

The Bristol general practitioner with special interest dermatology service is staffed by two general practitioners with special interests and a specialist nurse. Both general practitioners with special interests have a postgraduate diploma in practical dermatology, had been clinical assistants in dermatology for two years, and had been on the British Society of Dermatological Surgery skin surgery course.

A consultant dermatologist provides clinical support for two sessions per month. The service operates from a suburban health centre and provides care for patients registered with the 29 general practices in one primary care trust. Patients see a general practitioner with special interest at their first appointment but may be followed up by a general practitioner with special inter-

Criteria for exclusion from the service are on bmj.com

est or the specialist nurse, or may be referred to hospital outpatient care if necessary.

Patients with skin problems are referred by general practitioners to the outpatient dermatology service as usual. Suitability for management in the general practitioner with special interest service is assessed by a consultant or general practitioner with special interest on the basis of the referral letter. All patients were considered suitable except those under specific exclusions (see bmj.com).

We invited all patients suitable for general practitioner with special interest management to participate in a randomised controlled trial. Those declining participation were offered hospital care. Those who indicated that they no longer needed an appointment or did not reply after a reminder were removed from the waiting list, as is usual practice at the hospital.

Randomisation and outcomes

We randomised patients individually in a 2:1 ratio to the general practitioner with special interest service or to usual hospital outpatient care, stratified by practice. The unequal randomisation ratio was chosen so that the general practitioner with special interest service was working at a reasonable level of capacity in the light of the recruitment rate observed during a pilot phase. Patients were recruited through a letter from the hospital appointments office and allocated independently by a research associate using a computerised randomisation schedule generated by the trial statistician (TP). Allocation was blind to all patient details except a practice identifier.

Primary outcomes were disease related quality of life and accessibility of care. We assessed quality of life using the dermatology life quality index[7] and also a single item measure of patient perceived improvement in which patients indicated on a 5 point Likert type scale whether their skin condition was better or worse. Following preliminary interviews with patients we devised four questions on the accessibility of care in relation to finding where to go for the appointment, travel, parking, and public transport. Secondary outcomes were patient satisfaction with the consultation (assessed using the consultation satisfaction questionnaire),[8] satisfaction with facilities, patients' preference for site of care, the proportion of patients failing to attend appointments, and waiting times from receipt of referral letter to first appointment. We collected data from patient questionnaires before randomisation, at the first appointment, six weeks after the appointment, and nine months after randomisation. We obtained further data from patients' medical records.

Sample size

Our sample size calculations were based on seeking to establish equivalence for effectiveness (dermatology life quality index) between the general practitioner with special interest service and hospital. We needed 290 patients in the primary care arm and 145 patients in the hospital arm to provide 80% power to rule out differences larger than 0.29 standard deviations in either direction, with two sided 95% confidence intervals. Assuming 20% attrition, we needed to recruit 544 patients. For other measures the analysis was based on detecting a difference between the trial arms. The same sample size has 80% power to detect a difference of 0.29 standard deviations in any continuous variable or to detect differences of 15 percentage points in dichotomous variables (two sided 5% α).

Analysis

We used multiple regression to compare the primary outcomes at nine months, adjusting for baseline dermatology life quality index and stratification by practice, carried out on the principle of intention to treat. Our primary analysis of the index included only patients providing data at nine months, but we carried out a sensitivity analysis when missing follow-up data were assumed to be the same as the last recorded measurement. Since the distribution of scores on the index was highly positively skewed, we based our analysis on the log index score (after adding one to all scores to incorporate zero values), and consequently used the ratio of geometric means for statistical comparisons. We compared trial arms for the single item measure of patient perceived improvement using a proportional odds regression model for an ordered categorical variable, adjusted for practice.

We examined the questions about access to care using factor analysis, and three of the four questions were found to comprise a reasonably coherent scale (Cronbach's $\alpha = 0.64$, excluding the question about use of public transport). We calculated an access score for each patient as the percentage of the maximum possible on these questions and compared the trial arms using multiple regression adjusting for practice. We also analysed the responses to the individual question items descriptively.

We assessed the secondary outcomes using linear or logistic regression as appropriate, in each case adjusted for practice. Total and subscale scores on the consultation satisfaction questionnaire were calculated as the percentage of the maximum possible score. Using initial factor analysis we found that three extra questions about satisfaction with the receptionists, the waiting room, and the consulting room formed a coherent scale (Cronbach's $\alpha = 0.78$), which we labelled as "satisfaction with facilities." We assessed patients' preferences for site of care at baseline and analysed preference at the end of the study adjusted for baseline preference. It was not possible to blind participants or researchers to group allocation.

Results

We recruited patients between 1 September 2002 and 31 October 2003 (figure). Based on the referral letters, 49% (987/2028) of referred patients seemed to be suitable for management by the general practitioner with special interest service, but 219 of these were ineligible for the trial, mainly because they were removed from the waiting list before recruitment. Seventy two per cent (556/768) of eligible patients agreed to participate and were randomised—354 to the general practitioner with special interest service and 202 to hospital outpatient care. Questionnaires were completed by 435 (78%) patients at their first appointment, by 438 (79%) patients six weeks later, and by 422 (76%) patients nine months after randomisation.

Table 1 lists the diagnoses described in the referral letters. Patients in each group had similar characteristics at baseline (table 2).

Primary outcomes

We found no evidence of any noticeable difference between the trial arms in clinical improvement (table 3), assessed using the dermatology life quality index and the single item measure of patient perceived improvement. A sensitivity analysis of the index incorporating the last observation carried forward to replace missing data had virtually no effect on these results.

Patients found the general practitioner with special interest service to be more accessible than the outpatient clinic (mean access scores 76.1 and 60.5, respectively; adjusted difference between means 14, 95% confidence interval 11 to 19, $P < 0.001$), with detailed results for the individual accessibility questions given in table 4.

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Table 1 Diagnoses given in referral letters. Values are numbers (percentages) of patients

Diagnoses	General practitioner with special interest group (n=354)	Hospital outpatient group (n=202)	Combined (n=556)
Eczema, psoriasis	89 (25)	52 (26)	141 (25)
Urticaria, pruritus	21 (6)	13 (6)	34 (6)
Benign lesion*	32 (9)	15 (7)	47 (8)
Undiagnosed rash	45 (13)	16 (8)	61 (11)
Undiagnosed lesion	45 (13)	24 (12)	69 (12)
Keratoses, basal cell carcinoma	31 (9)	23 (11)	54 (10)
Moles	24 (7)	13 (6)	37 (7)
Infective condition	10 (3)	9 (4)	19 (3)
Acne, rosacea	13 (4)	10 (5)	23 (4)
Other	44 (12)	27 (13)	71 (13)

*For example, seborrhoeic wart, cyst, naevus.

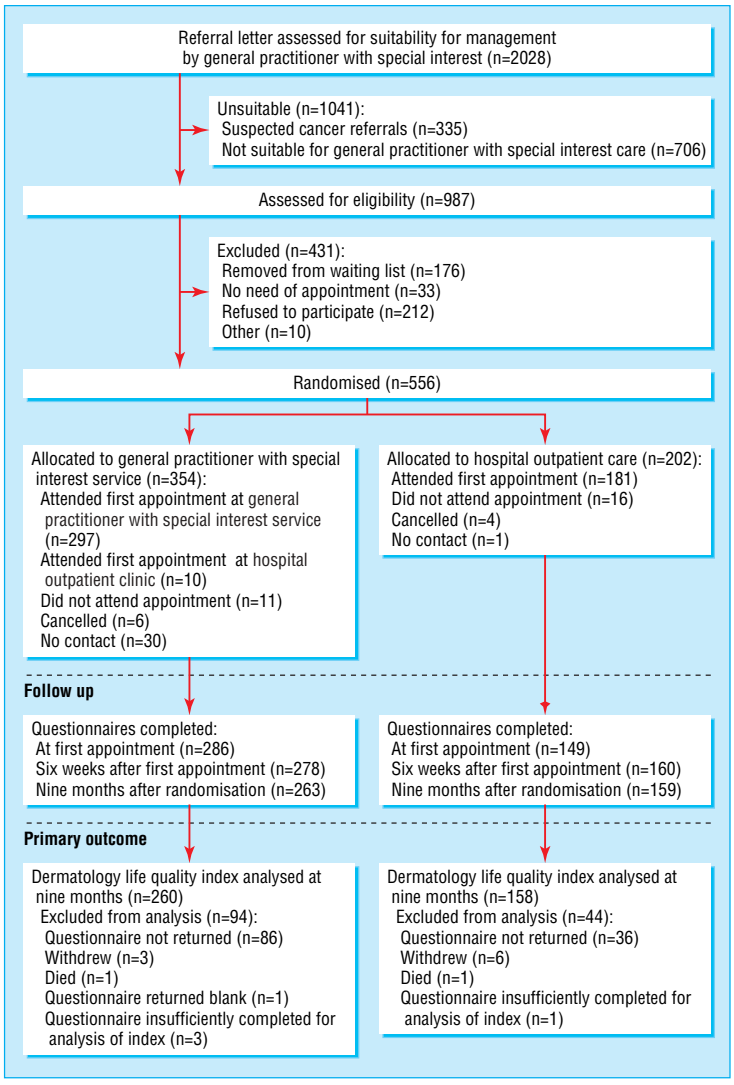
Table 2 Characteristics of participants at baseline. Values are numbers (percentages) of patients unless stated otherwise

Characteristics	General practitioner with special interest group (n=354)	Hospital outpatient group (n=202)
Mean (SD) age	47.6 (19)	48.5 (19)
Age groups (years):		
16-24	42 (12)	23 (12)
25-34	67 (19)	38 (19)
35-44	57 (16)	35 (17)
45-54	56 (16)	21 (10)
55-64	46 (13)	37 (18)
65-74	52 (15)	28 (14)
≥75	34 (9)	20 (10)
Women	213 (60)	122 (60)
Median dermatology life quality index score (interquartile range)	4 (2-9)*	4 (1-8)†

*n=351.
†n=197.

Secondary outcomes

Patients randomised to the general practitioner with special interest service were slightly more satisfied with their consultations than those randomised to the outpatient clinic, but the difference was small (table 5). Analysis of the satisfaction subscales shows that the greatest difference was for perceived time in the consultation. Patients in the general practitioner with special interest group were also slightly more satisfied with the facilities (table 5).



Flow of participants through trial

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Table 3 Primary outcome: quality of life. Values are medians (interquartile ranges) unless stated otherwise

Variables	General practitioner with special interest group	Hospital outpatient group	Ratio of geometric means (95% CI)	P value
Dermatology life quality index*:				
6 weeks after first appointment (n=436)	2 (0-5)	1 (0-3)	1.13† (0.96 to 1.33)	0.14
9 months after randomisation (n=418)	1 (0-4)	1 (0-3)	0.99‡ (0.85 to 1.15)	0.88
Single item measure of improvement§:				
6 weeks after first appointment (n=430)	4 (3-5)	4 (3-5)	1.05 (0.73 to 1.50)	0.80
9 months after randomisation (n=409)	4 (3-5)	4 (3-5)	1.17 (0.81 to 1.70)	0.40

*Higher scores represent worse quality of life.
†Adjusted for baseline, stratification, and time since randomisation (n=429).
‡Adjusted for baseline and stratification (n=412).
§Higher scores indicate greater improvement.

Before randomisation, 61% (328/537) of participants expressed a preference to be seen at the general practitioner with special interest service. We asked them again at the end of the trial about their preference for future care. Although 61% (255/416) again preferred the general practitioner with special interest service, an interaction test between baseline preference and trial arm in respect of final preference indicated that people were more likely to prefer future care in the setting in which they had actually been seen.

Table 4 Responses to individual question items about access to care. Values are numbers (percentages) of patients

Question item	General practitioner with special interest group	Hospital outpatient group
It was very easy to travel to my appointment:	n=278	n=146
Strongly agree	118 (42)	35 (24)
Agree	116 (42)	70 (48)
Neither agree nor disagree	18 (6)	20 (14)
Disagree	19 (7)	17 (11)
Strongly disagree	7 (3)	4 (3)
It was very difficult to find a parking space:	n=270	n=130
Strongly agree	6 (2)	27 (21)
Agree	12 (4)	17 (13)
Neither agree nor disagree	15 (6)	8 (6)
Disagree	97 (36)	18 (14)
Strongly disagree	93 (34)	4 (3)
Not applicable	47 (17)	56 (43)
Finding where to go for my appointment was difficult:	n=276	n=140
Strongly agree	11 (4)	3 (2)
Agree	19 (7)	10 (7)
Neither agree nor disagree	20 (7)	19 (14)
Disagree	140 (51)	84 (60)
Strongly disagree	86 (31)	24 (17)
It was easy to get public transport to my appointment*:	n=264	n=142
Strongly agree	13 (5)	23 (16)
Agree	33 (13)	40 (28)
Neither agree nor disagree	27 (10)	12 (9)
Disagree	17 (6)	9 (6)
Strongly disagree	11 (4)	4 (3)
Not applicable	163 (62)	54 (38)

Denominators vary because of missing responses.
*Question did not contribute to access scale identified using factor analysis.

Table 5 Secondary outcome: patient satisfaction

Variables	Mean (SD) care by general practitioner with special interest (n=286)	Mean (SD) hospital outpatient care (n=149)	Difference in means* (95% CI)	P value
Consultation satisfaction questionnaire:				
Overall score (n=386)	71.05 (13.50)	65.93 (17.17)	4.09 (0.92 to 7.25)	0.01
Subscales:				
General satisfaction (n=418)	76.18 (18.04)	68.78 (23.29)	5.85 (1.76 to 9.93)	0.01
Professional care (n=413)	77.89 (15.49)	72.02 (19.82)	4.69 (1.15 to 8.24)	0.01
Depth of relationship (n=405)	60.03 (16.41)	58.69 (17.94)	0.68 (–2.84 to 4.21)	0.70
Perceived time (n=419)	69.02 (18.99)	61.57 (22.86)	6.59 (2.36 to 10.81)	0.002
Facilities scale (n=413)	79.83 (13.56)	74.71 (16.21)	4.59 (1.60 to 7.58)	0.003

Based on 435 responses to questionnaire 2. Denominators vary for different scales because of missing data. Scales scored from 0-100, with 100 representing maximum satisfaction.
*Multiple regression analysis adjusted for practice.

Fewer patients randomised to the general practitioner with special interest service failed to attend their initial appointment compared with those randomised to the outpatient clinic (6%, 18/318 *v* 11%, 21/197; P = 0.04). Including follow-up appointments, the proportion of all appointments not attended was similar in both arms (8%, 60/742 *v* 11%, 37/341; P = 0.14).

The main waiting time between the referral letter being received and a first appointment was much shorter for patients randomised to the general practitioner with special interest service than to the outpatient clinic (mean wait 72 days *v* 113 days; mean difference 40, 35 to 46; P < 0.001).

Of the patients randomised to the general practitioner with special interest service, 59% (181/307) attended at least one follow-up appointment, including 12% (38/307) who were seen at the hospital for follow-up. Of patients randomised to the outpatient clinic, 44% (79/181) were followed up, all at the hospital.

Table 6 shows the diagnoses of patients made at their last consultation during the trial period. Details of investigations and procedures undertaken are given in the companion paper on economic evaluation.[6]

Discussion

A general practitioner with special interest service for dermatology provided care that was more accessible and preferred by patients than hospital outpatient care, with no evidence of

Table 6 Diagnoses at final clinic consultation. Values are numbers (percentages) of patients

Diagnostic categories	General practitioner with special interest group (n=307)	Hospital outpatient group (n=181)	Combined (n=488)
Diagnosed rash*	140 (46)	70 (38)	210 (43)
Benign lesion†	78 (25)	54 (30)	132 (27)
Undiagnosed rash	14 (4)	3 (2)	17 (4)
Undiagnosed lesion	11 (3)	4 (2)	15 (3)
Keratoses, basal cell carcinoma	17 (5)	13 (7)	30 (6)
Pustular or infective condition‡	17 (5)	14 (8)	31 (6)
Other	27 (9)	18 (10)	45 (9)
Pending	3 (1)	5 (3)	8 (2)

*For example, eczema, psoriasis, urticaria.
†For example, seborrhoeic wart, cyst, naevus.
‡Acne, rosacea, skin infection.

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important differences in clinical outcomes. Patients expressed slightly greater satisfaction with their consultations and with the facilities in the service setting and also experienced shorter waiting times for their first appointment. About half of all the referrals made to the outpatient dermatology department seemed suitable for management by a general practitioner with special interest, and only 12% of those seen by a general practitioner with special interest had to be referred on to the hospital. However the finding that patients attending the general practitioner with special interest service were more likely to have follow-up appointments, along with other differences in the process of care, has consequences for the cost of the service (see accompanying paper[6]).

Strengths and weaknesses of the study

Our study provides rigorous evidence on the effectiveness of a general practitioner with special interest service. Although similar schemes are now widespread, the only previous evidence about their benefits comes from observational studies, mostly based on routinely collected data of uncertain reliability.[9–12]

The main limitation of this study is that it is based on one clinical specialty and one geographical area, so the findings may not necessarily apply to other settings, conditions, or models of organisation. However, dermatology is the second most common specialty chosen for general practitioner with special interest services in England,[5] and there is no reason to suppose that the findings about accessibility and acceptability would not be equally relevant to other similar services.

The point estimate for the primary outcome of disease specific quality of life was almost identical in the two arms after nine months, and the confidence limits correspond to patients in the general practitioner with special interest arm having a skin related quality of life about 15% better or worse in relative terms than those in the hospital arm. Since this represents a difference of only about 1.5 points on the dermatology life quality index measure, the findings suggest that meaningful differences between the two arms can reasonably be ruled out.

Other weaknesses of this study include the possibility of recruitment or response biases. Only 72% of eligible patients agreed to participate in the trial, and those declining often cited a preference to be seen at the hospital (data not shown) rather than unwillingness to participate in research. If, following the completion of the trial, all suitable patients referred to the outpatient clinic were automatically transferred to the general practitioner with special interest service then the overall level of satisfaction with the general practitioner with special interest service may be lower. This suggests that it is important that patients retain a choice about where they are seen.

Non-response bias is possible because follow-up was not complete and there were slightly different follow-up rates in the two arms; however, the sensitivity analysis on missing data indicates that this was unlikely to have influenced the central conclusions.

Relation with previous studies

The findings from this study are consistent with earlier observational studies[9 10] and also a recent Audit Commission study of new care pathways in primary care.[11] Our findings also show clear parallels with earlier research about consultant outreach clinics.[13] A systematic review concluded that the advantages of specialist outreach clinics were improvements in patient experience and access.[14] No consistent differences were found in health outcomes, but outreach clinics were generally more costly than hospital outpatient clinics.

What is already known on this topic

General practitioner with special interest schemes are being developed throughout England

The aim is to improve access to specialist advice by providing a local service and cutting waiting lists

Evidence is lacking about whether this type of service produces equally good clinical outcomes to outpatient care, improves accessibility, or is acceptable to patients

What this study adds

Patients with non-urgent skin problems allocated to a general practitioner with special interest service had neither better nor worse health outcomes than those allocated to outpatient care

Patients referred to the service were seen more quickly, thought it was more accessible than the hospital, and were slightly more satisfied

Implications for policy

Our study provides support for the effectiveness, accessibility, and acceptability of this general practitioner with special interest service. However, as shown in the companion paper, these benefits come at considerable additional cost.[6] If the main purpose of general practitioner with special interest schemes is to increase capacity to reduce waiting times for appointments, it may be more efficient to achieve this by increasing capacity in hospital.

It is difficult to disentangle whether the benefits and costs of general practitioner with special interest services are related to the fact that the clinician is a general practitioner with special interest or to the community location of the service. Further research should compare general practitioner with special interests working in hospital settings with those working in community clinics and should compare different models of skill mix such as employing specialist nurses rather than doctors.

There are important trade-offs to be made between the advantages and disadvantages of general practitioner with special interest services exemplified by this study. It may be possible to reduce costs by increasing patient throughput, but this may negate the benefits of shorter waiting times and longer consultations which in turn are probably associated with greater patient satisfaction. Alternatively, economies of scale might be achievable by providing a general practitioner with special interest service within a larger centralised clinic or hospital, but this may reduce local accessibility. The relative importance of these issues of accessibility, waiting times, and costs in relation to general practitioner with special interest services is likely to be related to the context of geographical area and clinical topic and also to the feasibility of increasing service capacity in other ways.

Conclusion

We found no evidence that patients with non-urgent skin problems randomly allocated to a general practitioner with special interest service experienced better or worse health outcomes than those allocated to usual outpatient care. Patients referred to the general practitioner with special interest service were seen more quickly, thought it was more accessible than the hospital, and were slightly more satisfied with their consultations and the facilities.

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Amendment

This is Version 2 of the paper. In this version, the abstract has been amended slightly (but no data or conclusions changed).

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