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Self-referral to physiotherapy: deprivation and geographical setting Is there a relationship? Results of a national trial

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Abstract

Objectives To establish the level of self-referral in urban, semi-rural and rural primary care settings, encompassing a range of deprivation, in Scotland.
Design of study Quasi-experimental.
Setting Twenty-nine general practices throughout Scotland.
Participants Three thousand and ten patients (>16 years) and physiotherapists from throughout Scotland.
Method Practices were classified in terms of their location and level of deprivation (DEPCAT scores). Historical data were used to establish national referral rates in these settings. Self-referral was introduced in each setting and the proportions of patients referring themselves or being referred by their general practitioner (GP) were collated over a full year. A further category of 'GP-suggested' referral was also included.
Results There were different rates of referral according to setting ($P < 0.001$). A national adult referral rate of 53.5/1000 was identified. Rural areas experienced the highest rates (66/1000) of referral compared with urban (44.5/1000) and semi-rural (49/1000) settings. An overall 'true' self-referral rate of 22% was found. Rural areas experienced the highest levels of both self- and GP-suggested referrals (32% and 26%, respectively). An increase in total referral numbers was experienced in less than 20% of locations after introducing self-referral, all of which had a history of underprovision. Self-referrers came from all socio-economic settings, although differences were observed between the groups ($P < 0.001$).
Conclusions Introducing self-referral does not appear to result in an increase in the overall referral rate when reasonable levels of service are already being provided in line with national rates according to geographical setting. Deprivation does not appear to exert a major influence on referral rates. However, the rate of self-referral in the long-term future is impossible to predict.
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Keywords: Self-referral; Physiotherapy; Geography; National trial; Deprivation

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Background and purpose

In 2004, the results of an 18-month pilot study that explored the feasibility of introducing patient self-referral to physiotherapy (direct access) in a primary care setting were reported [1]. The findings of the study suggested that self-referral was both feasible and acceptable, and that contrary to popular belief, it did not result in an overall increased rate of referral to physiotherapy. These findings supported the only other published work of a pilot of self-referral to physiotherapy in the UK [2]. It was also identified that self-referral may be associated with major positive implications for physiotherapy and general practitioners' (GP) workloads. However, a concern was also raised that the results represented the findings in a single general practice location that could not be described as representative of, and therefore relevant to, all primary care settings. Further investigation over the range of geographical and socio-economic settings encountered in primary care was recommended to ensure that self-referral was universally appropriate before advocating for its wider introduction. It was felt that this was required to develop a more robust evidence base and to assure the credibility of the profession. To this end, the present authors undertook a 24-month national trial of patient self-referral involving 29 separate sites throughout Scotland and over 3000 patients.

Referral rates to physiotherapy

One of the major concerns voiced about the efficacy of introducing self-referral has been the fear that services will be overwhelmed by the numbers of patients referring themselves. This fear may have been borne out of the experience following the introduction of open (GP) access to services throughout the 1980–1990s. Studies that attempted to evaluate the impact of this on physiotherapy referral rates clearly identified that when open access was introduced, the referral rate to physiotherapy increased by up to four-fold in some cases [3–9]. Reports of the number of referrals, however, varied enormously (8–54/1000), with differing referral patterns evident within and across geographical regions [3]. Since the 1990s, there has been a significant increase in physiotherapy activity within primary care and community settings in line with government targets and aspirations [10,11]. Previous work in 1993 by one of the authors identified a referral rate to physiotherapy of 36/1000 [12]. Although this rate later increased, it remained static between 1997 and 2003 at 42/1000, a rate also supported by the results of the self-referral pilot work [1]. More recently, information about open access referral rates to outpatient musculoskeletal services was published by the Association of Chartered Physiotherapists in Management [13]. A survey of 91 UK National Health Service (NHS) trusts in 2001 identified widely varying referral rates of between 3 and 115/1000 and a mean rate of 28/1000. The reason for these variations was not reported.

Rurality and health care

Scotland covers one-third of the land mass of the UK yet is home to only 11% (5.3 million) of its total population [14]. The geography of the country varies considerably and includes urban, semi-rural and rural areas. The majority of people (80%) live within the densely populated central belt region or within 30 minutes travelling time of the four major cities, whilst the remaining 20% populate the more rural areas including the borders, highlands and islands. The Scottish Executive have published a definition that classifies communities as 'rural' if they have a population of less than 3000 [14].

Having established the feasibility of self-referral in an urban setting, the authors were keen to explore whether this mode of access was just as feasible irrespective of geographical setting. A recent review undertaken by the British Medical Association examined the evidence for the provision of health care in rural settings [15]. The available, yet limited, evidence to date suggests that different approaches to healthcare provision may be needed in rural and urban areas, as those that work well in urban areas often do not translate to a rural situation. In addition, there are rural–urban differences in uptake rates and health outcomes [16]. No evidence could be located that had considered referral patterns or uptake rates to physiotherapy in varying geographical settings. The only available evidence relates to the diagnosis and management of major diseases such as cancer [17], rather than conditions that primarily affect physiotherapy populations. Rural populations tend to have a greater proportion of older people [18]. This means that healthcare practitioners in rural areas often need to deal with chronic conditions, many of which may include musculoskeletal problems [19]. The majority of referrals to physiotherapy in primary care (55%) are for people aged over 50 years of age, with over 20% being aged over 65 years [20]. These referrals are also predominantly musculoskeletal in origin (>90%) [1–3,10,18].

Deprivation

Deprivation and poverty are important determinants of health and disease, and various aspects of deprivation have been the subject of previous reports [21,22]. It was felt important that the issue of deprivation in all settings should be considered when determining the feasibility of providing self-referral to physiotherapy.

Aims

The aims of the overall study were to:

- develop and implement a number of self-referral physiotherapy services introduced in parallel to GP referral in a

range of geographical and socio-economic settings found within primary care throughout Scotland;
- compare the referral types in these settings;
- compare the demographic and clinical profile of the referral types;
- investigate the impact of referral types on GPs' workloads; and
- ascertain the views of clinicians, service users and non-users.

This paper will explore rates of referral to physiotherapy both nationally and in a range of geographical settings. It also aims to examine if geography and/or deprivation have any influence over the type of referral, i.e. GP or self-referral. In response to concerns raised, the paper will aim to provide an indication of whether or not self-referral results in increased demand for services. Comparisons of demographic factors and clinical profiles of the referral types are reported in an accompanying paper [23]. The results relating to the other aims of the study will be published at a later date.

Method

The original pilot methodology was replicated within the national trial [1].

Settings

Twenty-nine sites (total practice population, 163 608) from throughout the length and breadth of Scotland were recruited to the study (Fig. 1). Practice selection was as a result of the authors asking lead physiotherapists in each health board region to propose practices that may be interested in being involved in a national study. They were only included if they could provide evidence that they had had an established and consistent referral rate to physiotherapy for the previous 3 years, and had the full support of their organisation, including that of the clinical staff involved. Every effort was made to ensure that the practices recruited covered a range of geographical settings and that a variety of deprivation levels were included. The actual number recruited was determined after consulting a statistician. In reality, however, primary care services tend to be sited in populated areas, regardless of whether they serve a rural or urban population. In more rural areas, they may provide services to a far more widespread and remote population.

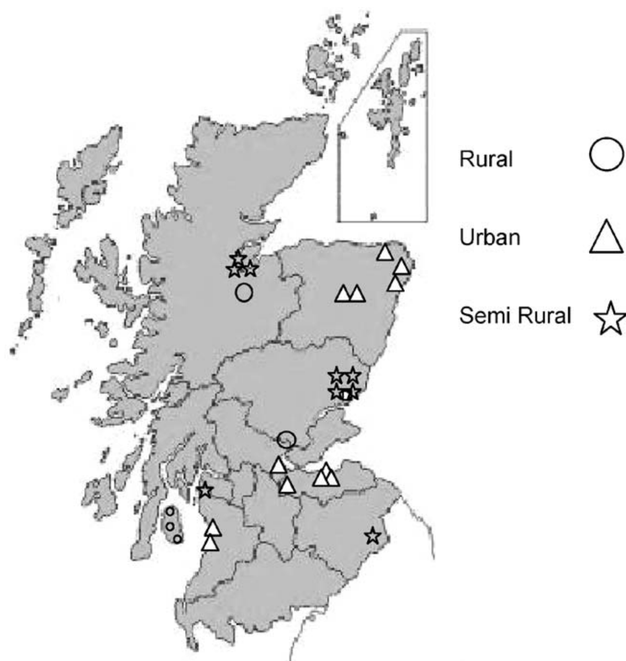

Fig. 1. Location of self-referral sites throughout Scotland.

On-site preparation

The authors provided support at each participating site and assisted them in their general preparation for introducing self-referral. This included publicising the change to the service within the practice population, developing patient self-referral forms, and training staff in the data collection process to ensure that data items were consistently understood. Each site underwent an introductory 'run-in' period of between 2 and 3 months to ensure that there was clarity about all aspects of the methodology before 'live' data were collected. Regular contact throughout the introductory period and the year-long period of data collection was maintained through a variety of means including site visits, telephone and E-mail contact.

Timescales

The first site was recruited in April 2003. Due to the time constraints associated with the preparation period, it actually took a full year to recruit and induct all of the original 29 participating sites. The last site completed their year-long period of data collection in April 2005.

Participants

All patients referred to or referring themselves to physiotherapy over a full year, after an average 2–3-month introductory period, were included. The only exclusions were children under the age of 16 years and those not able to give consent. In one of the more rural settings, it was normal practice to deliver routine antenatal care. These patients were excluded from the data collection process. Each participant was sent an information sheet about the trial prior to their first appointment, and provided written consent for the use of their demographic and clinical data.

Study design

Self-referral was introduced in parallel to the established system of GP referral to ensure that patients or GPs acting on

their behalf were not compromised in their ability to access physiotherapy. Appointment allocation was determined locally but it did not advantage self-referrals over GP referrals in terms of waiting time to physiotherapy.

Data collection: practice data

The characteristics and profile of each participating site were collated (Box 1). DEPCAT scores were used to indicate the level of deprivation within each practice; these scores are derived from the Carstairs score and deprivation categories that are the most commonly used measure of deprivation in relation to health and disease within Scotland [24,25]. The Carstairs score can be collapsed and restructured into seven deprivation categories to give the DEPCAT score, which ranges from 1 (most affluent postcode sectors) to 7 (most deprived postcode sectors). The deprivation categories were last updated using 2001 census and postcode information [26,27]. They are not a measure of the extent of material well-being or relative disadvantage experienced by individuals, but are a summary measure applied to populations contained within small geographical localities [27]. Practices were classified as being urban or rural in line with the national definition [14], but they were also asked to indicate what proportion of their population had to travel for more than 15 minutes (off peak) to reach the practice from their home. This was included to provide a more detailed profile of the practice population, particularly in more remote areas where practices are commonly situated in populated areas but provide services to a wide catchment area. Referral data from the last 3 years were collated, and the overall national referral rate and rates from the different geographical settings were calculated.

Box 1. Characteristics and profile data collected for each participating practice

Physiotherapy contact name and details
Practice name and contact details
Practice population
Breakdown of males:females
Proportion of practice aged >65 years
Confirmation of open access physiotherapy provision for >3 years
Whether or not this is provided on-site
Number of referrals for each of the last 3 years
Proportion of patients who have an off peak travelling time >15 minutes to get to the practice
DEPCAT (Carstairs and Morris Deprivation) score
Physiotherapy referral numbers for the last 3 years

Patient data

Referrals to physiotherapy during the study year were classified as either ‘self-referral’ or ‘GP referral’ and collated per site. Another category, ‘GP-suggested referral’, was added following the pilot work to ensure that the ‘true’ self-referral rate could be identified. It had been noted that, in some circumstances, patients did visit their GP who, rather than eliciting a written referral, would just suggest to the patient that they should refer themselves directly. The authors were keen to capture the extent of this understandable practice within the national trial. Hospital consultant referrals were not included. Demographic information, age group and gender were also collated for all referrals. At the end of the period of data collection, each of the participating sites was questioned to establish whether or not they considered that the introduction of patient self-referral had led to an increase in the number of referrals they received.

Statistical analyses

A statistician was consulted at all stages throughout the project. The data were analysed using SPSS statistical analysis software using the non-parametric Chi-squared test for nominal and categorical data. The level of significance was set at 5%.

Results

The data from 29 GP practices throughout Scotland were originally included. These represented locations from throughout Scotland, including an island community. Three practices had to withdraw from the study due to unforeseen staffing problems early in the period of data collection, and their data were not included in the analyses.

In terms of their geographical setting, the remaining 26 practices were classified into three groups. In addition to the definition used by the Scottish Executive [14], the authors decided to introduce a further classification that reflected practices located in towns with populations of 3000–12 000 people that also provided a service to a more widespread population for the reasons described previously. These were classified as being semi-rural. The characteristics of each of the groups of practices can be found in Table 1.

Practice characteristics and historical referral rates to physiotherapy

Forty-six percent of practices were situated within urban settlements, whilst 35% provided a service to a more semi-rural population and 20% were defined as being rural. When historical referral data from the previous 3 years were examined, considerable differences were found in the average referral rate to physiotherapy per 1000 of the practice population. The highest mean rate was experienced in the most rural practices (66/1000) and the lowest rate was found in urban settings (44.5/1000). The majority of urban practices (75%) reported referral rates of <55/1000. The three urban practices

Table 1
Practice characteristics by geographical setting

	Urban practice group ($n=12$)	Semi-rural practice group ($n=9$)	Rural practice group ($n=5$)	P value
Practice list size				
Mean	6588	6226	1843	
Range	3727 to 11 480	4167 to 10 000	1191 to 2560	
Referral rate per 1000				
Mean	44.5	49	66	
Range	23 to 72	21 to 149	27 to 94	
Gender				
Male:female (%)	50:51	51:49	50:50	0.207 (NS)
Age >65 years (%)				
Mean	14	17	18	0.01
Range	10 to 17	14 to 19	15 to 21	
Travelling time >15 minutes (%)				
Mean	14	45	52	
Range	3 to 33	26 to 65	37 to 70	
On-site provision (%)				
Yes	84 (10)	45 (4)	40 (2)	
No	17 (2)	56 (5)	60 (3)	

NS, not significant. Overall national referral rate 53.5/1000 (total practice population included, 144 313). Number of practices in parentheses. Percentage totals may not equal 100% due to rounding errors.

with the highest referral rates (61–72/1000) had greater proportions of their practice population (24–33%) living more than 15 minutes travelling time from the practice than other urban practices. The overall national referral rate to physiotherapy was calculated to be 53.5/1000.

The gender breakdown between the groups was relatively consistent, with similar proportions in each group. This was not the case for the proportion of people aged over 65 years. Greater proportions of the rural population were aged over 65 years (18%) compared with the semi-rural (17%) and urban settings (14%) ($P=0.01$).

The proportion of people who had to travel for more than 15 minutes (off peak) in a car from their home to reach the practice was significantly less in urban areas (14%) compared with semi-rural (44%) and rural (52%) settings ($P<0.001$).

The majority of sites provided a dedicated service housed within the general practice (61%), rather than using a central location that provided physiotherapy services to a number of practices. However, the likelihood decreased in more rural locations. Only 40% of rural and 45% of semi-rural sites provided their services within practices compared with 84% of urban practices.

Referrals to physiotherapy by geographical group and referral type

The participating sites submitted data relating to a total of 3120 patients. After excluding those not eligible, 3010 patients were included in the analyses (Table 2). Overall, the majority of referrals to physiotherapy across all sites were made by GPs (61%). The 'true' rate of self-referral was identified as being 22%, with a further 18% of patients referring themselves at the suggestion of their GP. On further examination, however, there were significant differences between the location groups ($P<0.001$). Although a slightly greater proportion of patients referred themselves in rural locations (26%) compared with semi-rural (19%) and urban (23%) locations, the group that contributed most to the significant association noted was the low level of GP-suggested referrals within the semi-rural group (7%).

Considerably more people aged between 21 and 30 years were referred or referred themselves to physiotherapy in urban settings (12%). This rate was more than double that experienced in rural locations (5%) and higher than that in semi-rural settings (9%) ($P<0.001$). Greater proportions of people over the age of 65 years were referred or referred themselves in rural locations (29%) compared with urban (22%) or semi-rural settings (24%).

Referrals to physiotherapy by level of deprivation

A significant relationship was observed in the DEPCAT scores of the geographical groups (Table 3) ($P<0.001$). There were no patients from practices with a DEPCAT score of 1 or 7 in any of the groups. The majority of referrals came from practices with DEPCAT scores of 3, 4 or 5 (>79%). The greatest proportion of practices with a DEPCAT score of 2 were urban practices. Proportionally more patients from practices with DEPCAT scores of 2 and 4 referred themselves to physiotherapy than by any other mode of access, and this result was not found within the other DEPCAT categories. The relationship between age band and DEPCAT score proved to be significant ($P<0.001$). Patients from practices with a DEPCAT score of 2 had a higher mean age (54.5 years) than the other groups, and these practices had the greatest proportion of patients over the age of 50 years.

Table 2
Referrals to physiotherapy by geographical setting

	Urban practice group 41% (1237)	Semi-rural practice group 45% (1332)	Rural practice group 15% (441)	*P* value
Referral type				
GP referrals	51% (625)	75% (985)	43% (185)	<0.001
GP-suggested referrals	26% (321)	7% (83)	32% (138)	
Self-referrals	23% (286)	19% (248)	26% (114)	
Missing data	5	16	4	
Gender				
Male:female (% overall)	40:60	40:61	44:56	0.289 (NS)
GP referrals (%)	43:58	40:61	48:52	
GP-suggested referrals (%)	40:60	33:68	43:57	
Self-referrals (%)	36:65	41:60	38:63	
Age group (years)				
16 to 20	2% (18)	4% (44)	3% (10)	<0.001
21 to 30	12% (142)	9% (111)	5% (20)	
31 to 40	16% (196)	15% (197)	12% (53)	
41 to 50	21% (256)	18% (235)	20% (85)	
51 to 64	28% (344)	33% (423)	33% (142)	
65 to 74	15% (180)	14% (180)	18% (76)	
>75	8% (96)	10% (131)	12% (49)	
Mean, S.D., Range	51.5, ±16.5, 16 to 102	53.0, ±16.5, 16 to 102	55.5, ±16.0, 16 to 94	

GP, general practioner; NS, not significant; S.D., standard deviation. Percentage totals may not equal 100% due to rounding errors.

Table 3
Referrals to physiotherapy by DEPCAT category

	DEPCAT scores					
	2	3	4	5	6	*P* value
Geographical group						
Urban	25% (307)	23% (284)	16% (190)	32% (383)	6% (73)	<0.001
Semi-rural	17% (228)	14% (182)	34% (455)	35% (467)	0% (0)	
Rural	0% (0)	30% (133)	59% (260)	11% (48)	0% (0)	
Referral type (missing data, 25)						
GP referrals	16% (281)	19.5% (348)	30% (532)	32% (571)	4% (63)	<0.001
GP-suggested referrals	16% (84)	34.0% (184)	24% (130)	27% (140)	1% (4)	
Self-referrals	25% (162)	10.0% (65)	37% (240)	28% (177)	1% (4)	
Gender						
Male:female (%)	38:63	42:58	43:57	39:61	37:63	0.193 (NS)
Age group (years)						
16 to 20	2% (8)	2% (10)	3% (27)	3% (24)	3% (2)	<0.001
21 to 30	8% (42)	8% (45)	12% (106)	8% (64)	7% (5)	
31 to 40	15% (79)	18% (107)	15% (132)	12% (104)	19% (14)	
41 to 50	16% (81)	24% (141)	17% (149)	22% (187)	25% (18)	
51 to 64	32% (163)	32% (189)	29% (256)	32% (280)	29% (21)	
65 to 74	17% (88)	10% (65)	14% (125)	17% (147)	15% (11)	
>75	12% (60)	6% (36)	12% (109)	8% (69)	3% (2)	
Mean, S.D., Range	54.5, ±17.0, 16 to 101	50.5, ±15.0, 16 to 89	52.0, ±18.0, 16 to 101	53.0, ±16.0, 16 to 94	50.5, ±15.0, 16 to 80	

There were no patients from practices with a DEPCAT score of 1 or 7. Percentage totals may not equal 100% due to rounding errors.

Discussion

Interest in patient self-referral to physiotherapy has escalated since 2001. In addition to a ground swell among the physiotherapy profession, increasing levels of interest have been voiced by healthcare managers, professional bodies, general practitioners, politicians, patients and the wider public [28–41]. In 2003, in a YouGov poll of 2400 random members of the public, 89% stated that they wanted to be able to access a physiotherapist within the NHS without having to visit their GP first [42]. During the last year, the Chartered Society of Physiotherapy has been actively campaigning for

self-referral to be a 'real choice for primary care patients by 2007' [43], and is looking to this national trial to support this stance. The concept of patient self-referral is also supported by recent healthcare policies that have urged innovation, greater patient choice and improved access in primary care [44–47].

The major concern voiced in relation to self-referral has been that services would be overwhelmed by patients referring themselves. There is a distinct lack of published data that provide any indication as to the actual open access referral rates to physiotherapy that can be used to anticipate demand on services in differing geographical settings. All that is known is that referral rates vary considerably across the UK [1–9]. One aim of the national trial, therefore, was to investigate the referral rate to physiotherapy across Scotland, and to determine whether differences in geographical setting or deprivation influenced the rate of self-referral to physiotherapy.

The historical referral data provided by each of the participating sites identified that there were distinct differences in the rates of referral between the geographical groups. These data related to the previous 3 years and included GP referrals alone. Urban practices tended to have lower rates of referral to physiotherapy per 1000 of their population than practices in more rural settings. The highest referral rates were consistently reported in rural settings with one notable exception. One of the study locations was an island community that had three separate practices, all of which were involved in the national trial. Two of the practices had consistent referral rates to physiotherapy of 75 and 94/1000 per annum. However, the referral rate of the third practice was considerably lower (27/1000 per annum). When questioned about this anomaly, it was reported that the GPs from this practice traditionally did not refer many patients for physiotherapy. Anecdotal evidence would support this position and enforce the fact that GP referral behaviour is the major determinant of referral rates within systems of open access. GPs are known to vary in their referral rates to physiotherapy [3–7]. Referral behaviour can be influenced by where services are provided, how easily they can be accessed, by a GP's perception of the value and/or knowledge of physiotherapy, and other influencing factors such as the length of NHS waiting lists and the availability of and ability of individuals to access local private practitioners. It should also be considered that patients themselves can exert pressure on GPs to refer them to physiotherapy.

The reason why rural settings should experience higher rates of referral to physiotherapy in the absence of any informing evidence is also worthy of speculation. It is known that the healthcare needs of rural communities are different to those of urban areas [14–17]. It is also known that rural populations include a greater proportion of older people and that older people are more likely to suffer from chronic conditions, often of a musculoskeletal nature, i.e. conditions primarily seen by physiotherapists [15]. A greater proportion of patients aged over 65 years from rural settings accessed physiotherapy (29% versus 24% and 22%). The mean age of these patients was also greater than that in the other groups (55.5 years versus 51.5 years and 53 years). It should also be considered that there may be far fewer other alternative providers available in rural areas. This means that physiotherapists in these settings may see a greater proportion of the practice population as they may be the most or the only convenient and viable option. This would support the comment made by one such physiotherapist working in a rural setting who classified herself as a 'specialist generalist', a term not encountered in urban settings. In terms of age, it was reassuring to find that contrary to concerns voiced previously, patients of all ages and from all settings chose to refer themselves. The concern that certain sectors of society, particularly older patients, may be constrained in their ability to access physiotherapy themselves has been disproved.

The overall national referral rate (53.5/1000 per annum) is considerably higher than the rate reported by the Association of Chartered Physiotherapists in Management in 2001 [10]. They reported a mean national rate of just 28/1000. It should be noted that the period examined in the present study spanned 2001–2004 and all sites reported referral rates in excess of that published previously. Although the present data relate to Scotland, there is no reason to suggest that GP referral behaviour should differ in the rest of the UK. It should therefore be considered that the true referral rate to physiotherapy has been under-reported in the past.

The pilot study identified a self-referral rate of 22% [1]. The only other published study of patient self-referral to physiotherapy within the UK reported a much higher referral rate (37%) [2]. However, the accuracy of both of these rates is questionable as some patients may have been classified as self-referrals when, in reality, they referred themselves to physiotherapy at the suggestion of their GP. The national trial identified that the 'true' self-referral rate was 22% and that a further 18% of patients were referred at the suggestion of their GP.

Having established that rural areas experience greater numbers of referrals per 1000 of the population, it was interesting to see that the self-referral rate to physiotherapy in these settings was also higher than the national rate (26% versus 22%). The reason for this higher rate is not known, although it may be due to a number of influencing factors. The publicity strategy adopted by each setting varied. Practices in urban areas that were situated near to practices that were not involved had to rely on practice-based publicity, whereas practices in more rural settings that involved complete communities were able to advertise the service more widely in a variety of places frequented by the local population. It could be suggested, therefore, that rural communities may have been more aware of their ability to refer themselves to physiotherapy. It should also be considered that due to the greater use of physiotherapy services generally in more rural settings, communities may be more knowledgeable about physiotherapy and place a greater value on its use.

GPs in rural settings were also proportionally the highest 'suggesters' to their patients that physiotherapy may be the most viable option for their symptoms (32%). Whether this indicates a greater awareness or value attributed to physiotherapeutic appropriateness or the lack of other viable opportunities is unknown. A totally different referral behaviour was observed in GPs from semi-rural settings. They were the least likely to 'suggest' to patients that they should refer themselves for physiotherapy (7%). The reason for this behaviour is unknown but one possible explanation may be that these GPs followed the study protocol more closely and continued to complete written referrals as they were used to doing. The overall historical mean referral rate to physiotherapy in semi-rural settings of 49/1000 suggests that GPs in these settings do value physiotherapy as a viable treatment option for their patients.

Only a minority (<20%) of the participating sites reported that they experienced an increase in the overall referral rate following the introduction of self-referral, and only 8% (2) expressed concern at the level of increase. Those experiencing increases had some common factors, regardless of their geographical setting or level of deprivation. The rural practice described previously is a typical example. It would appear that in situations where the rate of referral had traditionally been considerably lower than the average rates, introducing self-referral did result in an increased rate of referral. It could be suggested, therefore, that this may be as a result of a historical underprovision of service and should not negate the value of self-referral. An informal survey of five other regions of Scotland that were not involved in the trial also identified that all services had experienced an increase in the rate of GP referrals to their services of between 3% and 30% during the last 2 years. It could be posed that this is an understandable consequence of current healthcare policies that are actively encouraging the development of primary-care-based services, including physiotherapy.

The majority of the Scottish population (68%) live within areas with DEPCAT scores of 3, 4 or 5 [27]. This proportion is not dissimilar to that found within this study (<79%). Less than 13.5% of the overall population of Scotland are reported to be living in areas with DEPCAT scores of 1 or 7, but both are represented in urban and rural settings [21,22]. However, very few practices in Scotland are classified as having DEPCAT scores of 1 or 7. This is due to the fact that the communities they serve may well be more affluent or deprived, but as very few practices only serve the extremes, this is reflected in their composite score.

A relationship was found between the deprivation levels experienced by the geographical groups ($P < 0.001$). There were no patients from practices with a DEPCAT score of either 1 (most affluent) or 7 (most deprived) within the trial. The fact that there were no patients from rural settings with a DEPCAT score of 2 or 6 makes a direct comparison difficult. However, according to national statistics, this is representative of rural settings where greater proportions of the population live in areas with DEPCAT scores of 3, 4 or 5 (79%) [22]. One of the aims of the present study was to examine whether there was a relationship between deprivation and self-referral. Patients from all DEPCAT groups included in the study referred themselves to physiotherapy, although greater proportions of patients from practices with DEPCAT scores of 2 or 4 referred themselves, with similar proportions from practices with DEPCAT scores of 5 and 6. What is most interesting about these results is the level of GP referral by DEPCAT score. It would appear that the more deprived the patient, the more likely it was that GPs referred them via the traditional mechanism. The concern that the self-referral utilisation rate may be influenced by socio-economic circumstances needs to be investigated further given the small number of self-referrers from practices with DEPCAT scores of 2. However, no further comments can be made about the extremes of deprivation and self-referral rates as the appropriate data were not available for analysis.

Limitations

It should be noted that although the participating sites did represent a variety of geographical and socio-economic settings found in Scotland and the majority of practices, no sites at the extremes of deprivation were recruited due to their rarity. The implications of the results for the 14% of the population that fall within these extremes must therefore be questioned and examined further. This paper has included discussion points and some recommendations for services that are based on the collective results. The relevance of these to all settings must be determined locally as it is recognised that physiotherapy services, the available workforce, populations and GP referral behaviour may differ considerably across the country.

Implications for physiotherapy services

There are implications for physiotherapy services associated with introducing patient self-referral. It is the authors' view that patient self-referral should only be introduced after consideration of the possible demand on services. Although the results of this trial have concluded that the introduction of self-referral does not lead to an increase in the overall referral rate, it is possible that some services may be constrained in their ability to offer such a facility due to staffing issues, available capacity and/or resources. Box 2 presents a checklist to assist with this task. However, what is clear from these results is that services already experiencing a demand in line with the national referral rate related to their geographical setting, irrespective of deprivation, should not expect to see a significant increase. The implications in terms of resources should therefore be minimal. It also needs to be highlighted that an increase in the referral rate does not automatically equate to an increase in workload. Services should bear this in mind and ensure that they consider other issues that impact

Box 2. Anticipated referral rate calculator

1. Calculate your present referral rate to physiotherapy as an expression of the annual rate per 1000 of the population you serve, i.e. practice population = 5000, total number of referrals per annum = 280 (5000/1000/280). Referral rate = 56/1000.
2. Classify the practice in terms of its location, i.e. use the definitions within this paper (urban, semi-rural, rural).
3. Compare your present rate of referral with the mean according to classification of location.
4. If your referral rate per 1000 is much lower, you can anticipate that you will experience an increase in the total number of referrals if you introduce self-referral. However, if your present referral rate per 1000 is similar or exceeds that quoted, you can anticipate that there will no increase in the number of referrals.

on the overall workload, such as contact numbers, staff grade, etc., before assumptions are made.

Conclusions

The results of this national trial have identified wide variations in the referral rate to physiotherapy across Scotland. Different rates are experienced in urban, semi-rural and rural settings for a variety of reasons. Introducing self-referral to physiotherapy in primary care does not seem to result in an unacceptable increase in the rate of referrals, except in settings where there is a history of underprovision. Patients of all ages, both genders and all levels of deprivation appear to utilise this mode of access. The authors feel that these results endorse the findings of the pilot work that self-referral is feasible, and that offering patients the option to self-refer regardless of geographical or socio-economic setting is a viable proposition. However, it is not possible to predict the rate of self-referral in the long-term future. It has to be considered that wider availability of this facility may lead to a greater awareness within communities, which could, in theory, result in increased rates of referral.

It is hoped that these results will add to the present discussions taking place throughout the UK and beyond about patient access to ensure that patients are offered the most appropriate range of modes.

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