

Controlled trial of an open-access physiotherapy service

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SUMMARY. A randomized controlled trial of outpatient open-access physiotherapy was carried out at West Cornwall Hospital during 1979/80. The referral rate to consultant outpatient clinics for those patients offered open-access physiotherapy was considerably lower than for the control group (17 per cent and 56 per cent respectively). Patients using the service received physiotherapy promptly although this did not result in shorter treatments. Those of the control group who eventually received physiotherapy had faced considerable delays. An analysis of self-reported information showed that patients receiving open-access physiotherapy recovered more rapidly. Taken overall, the results support the concept of open-access physiotherapy.

Introduction

AN open-access physiotherapy service for general practitioners enables them to refer patients directly for physiotherapy in outpatient departments or in the community. Despite discouragement in the 1972 Tunbridge report,¹ the Department of Health and Social Security (DHSS) has more recently indicated qualified support,² and by 1980 out of 216 health districts in England and Wales 140 had some provision for referral to hospital physiotherapy departments.³

Four benefits have been claimed for outpatient open-access service: pressure on consultant outpatient clinics is reduced,^{4,5} physiotherapy is given promptly,^{4,6} thus reducing the amount required,⁶ patients recover more rapidly,^{4,6} and patients return to work sooner.⁶

As there had been little research to test these claims, a randomized controlled trial of open-access outpatient physiotherapy was conducted at West Cornwall Hospital Penzance. The main aims of the trial were:

1. To assess the effect of an outpatient open-access service on patients' use of physiotherapy and other services (especially consultant outpatient services).

2. To assess what proportion of the control group eventually received physiotherapy and what delays these patients faced.

3. To provide some local information on the type of patients that general practitioners would consider suitable for open-access physiotherapy.

The trial had a further aim, which was to give an indication of whether patients made better progress if there was an open-access physiotherapy service available. The rates at which patients improved were assessed mainly by means of postal questionnaires, which allowed any gross differences to be observed.

Method

The Physiotherapy Out-Patient Department of West Cornwall Hospital serves a main area with a population of approximately 38,000 and, in addition, a fringe area where patients may either be referred to it or to physiotherapy departments in other hospitals. From April 1979 to July 1980, all general practitioners in the west of Cornwall were invited to enter suitable patients into the trial; hospital transport was not provided and no community work was undertaken. In the main area 14 general practitioners with combined lists of 26,000 took part fully in the trial, entering 164 patients (referral rate 4.7 per 1,000 per year). Three others withdrew at an early stage, having referred nine patients, and five doctors did not take part. In the fringe area 14 general practitioners with combined lists of 30,000 entered 57 patients (referral rate 1.4 per 1,000 per year). Thus 230 patients entered the trial (116 males, 114 females).

On entry to the trial each patient was randomly allocated to either the direct referral group or the control group. Patients in the direct referral group were given appointments to attend the Physiotherapy Out-Patient Department within seven days. Patients in the control group were managed by their general practitioners in the usual way, only obtaining physiotherapy via consultant referral. The direct referral group comprised 123 patients, the control group 107 patients. The characteristics of the patients in both groups were comparable, the only exception being that in the direct referral group there were 18 patients with knee conditions and only two such cases in the control group.

Patients were asked to complete postal questionnaires giving details of their conditions and progress, on entry, after one month and after three months from their entry to the trial. The response rates were 96 per cent, 87 per cent and 78 per cent respectively for the direct referral group, and 93 per cent, 77 per cent and 72 per cent for the control group.

Hospital records were examined for evidence of use of other services in the six months after entering the trial, and infor-

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Table 1. Age distribution and numbers in full-time employment (FTE) for all patients in the trial.

Age group (years)	Males		Females	
	Number in FTE	Total	Number in FTE	Total
Up to 14	–	2	–	2
15–24	3	4	3	4
25–34	17	18	7	14
35–44	17	19	11	20
45–54	25	32	10	25
55–64	13	19	3	14
65–74	1	15	1	25
75 and over	–	7	–	10
All patients	76	116	35	114

Table 2. Diagnosis and principal site affected by condition for all patients in the trial.

	Number of patients (n = 230)	(Percentage of total)
<i>Diagnosis</i>		
Cervical spondylosis	52	(23)
Sprains, strains, tears, contusions etc.	43	(19)
Osteoarthritis	33	(14)
Lumbar disc lesions	33	(14)
Frozen shoulder	12	(5)
Capsulitis	11	(5)
Rotator cuff syndrome	6	(3)
Other	40	(17)
<i>Site affected by condition</i>		
Back	70	(30)
Neck	64	(28)
Shoulder	44	(19)
Knee	20	(9)
Other	32	(14)

mation was obtained for all except three patients. Other information was collected from general practitioners and physiotherapists, and for those patients who were off work at the start of the trial there was additional information about their return to work in all cases except two.

Results

The patients

Table 1 gives the age distribution and employment status of all patients. Forty-eight per cent of the total were in full-time employment, and of those that were not, 74 per cent did housework of some sort. On entry to the trial, half those in full-time employment were off work because of their conditions.

Details of the general practitioners' diagnoses and the principal sites affected are given in Table 2. Chronic degenerative musculoskeletal conditions were predominant.

Use of services

The use of consultant outpatient clinics and the physiotherapy service during the six months after entry is summarized in Table 3. The routes taken by the patients are shown in Figure 1.

Patients in the direct referral group were referred, on entry, to the Physiotherapy Out-Patient Department of West Cornwall Hospital and were seen, on average, five days later. Three patients failed to attend. Two patients were referred back to the general practitioner; for one of these patients, physiotherapy was considered to be inappropriate, while the other one eventually received treatment after three weeks in a plaster jacket. Twenty-one patients from the direct referral group were subsequently referred by their general practitioners to consultant outpatient clinics for related conditions, defined as those with the same diagnosis and site causing entry (18 of them to the orthopaedic department). Five other patients were referred for unrelated conditions. No patients from either category were then referred for further physiotherapy.

Patients in the control group were not offered physiotherapy immediately. Sixty patients were referred by their general practitioners to consultant outpatient clinics for related conditions (58 to the orthopaedic department) and, of these, 40 patients were further referred for physiotherapy. Another two patients attended the Physiotherapy Out-Patient Department following private consultations, and one other patient slipped in with no trace of referral. For the control patients, the average time from entry to first physiotherapy appointment was 69 days. Twelve patients were referred to consultant outpatient clinics for unrelated conditions; none of these patients was subsequently referred for physiotherapy. It should be noted that consultant outpatient appointments were not necessarily requested at the time of entry to the trial.

The average number of attendances and length of treatment at the Physiotherapy Out-Patient Department were slightly lower in the direct referral group than in the control group, but the differences were not statistically significant (Table 3). The patterns of treatment were broadly similar in both groups.

There was little difference between the groups in domiciliary visits by consultants and in the use of hospital day and inpatient services.

Measurement of progress

We measured patients' rates of progress in two different ways: by asking them about the activities which they performed, and by obtaining their own assessments of their progress.

Each questionnaire included a list of 17 activities, and patients marked each applicable activity on a scale from 'impossible to do' (score = 1), to 'can do normally' (score = 5). The scores of four fundamental activities (walking, washing, dressing, using the toilet) were added to give an activity score ranging from 4 for complete

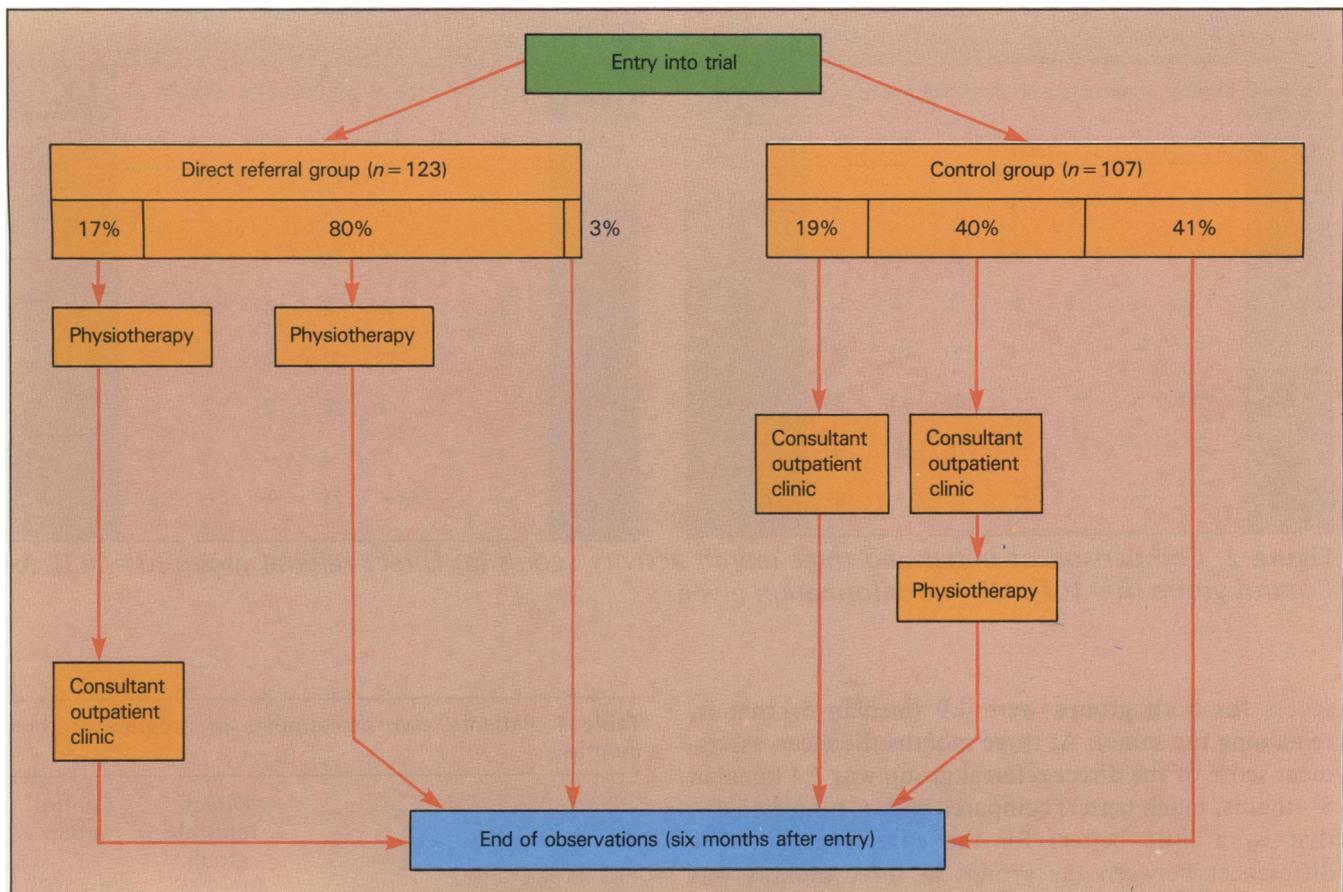


Figure 1. The main routes the patients took through physiotherapy and consultant outpatient clinics.

disability to 20 for full independence.

Response to the postal questionnaire provided information about the improvement of patients during the three months after entry for 78 per cent of the direct referral group and 72 per cent of the control group. Direct referral patients improved from an average activity score of 16.7 to 18.4, and control patients from 16.8 to 17.5. The corresponding medians for the direct referral group were 17 and 20, and for the control group 17 and 18. The mean improvement for the direct referral group was 1.7 (median 1) compared with 0.7 (median 0) for the control group. The difference in improvement between the groups is statistically significant, as indicated by a test for the difference between two means ($P < 0.01$) and by the Mann Whitney test ($P < 0.05$). Similar results were obtained from the scores for the full range of applicable activities.

Figure 2 summarizes the difference between the initial and the three-month activity scores. It can be seen, for example, that six out of the 13 patients in the direct referral group who had an initial score of 16 had progressed to a score of 20 (full independence) at three months. Of the patients for whom full information was obtained, 59 per cent of the direct referral group and only 30 per cent of the control group scored 20 at three months, a statistically significant difference ($P < 0.001$).

For the patients' own assessments of their progress, a

Table 3. Consultant outpatient and physiotherapy appointments in the six months after entry to the trial.

	Direct referral group (n = 123)	Control group (n = 107)
<i>Related consultant outpatient appointments</i>		
Patients referred	21*	60*
Average number of attendances per patient	2.2	1.9
<i>Unrelated consultant outpatient appointments</i>		
Patients referred	5**	12**
Average number of attendances per patient	2.0	2.3
<i>Physiotherapy</i>		
Patients treated	119*	43*
Average number of attendances per patient	8.6***	9.0

* $P < 0.001$.

** $P < 0.05$.

*** Excluding five patients making only one visit who did not complete a course of treatment.

scale was applied as set out in Table 4, which shows the results at three months. The mean initial assessment

(a) Direct referral group								(b) Control group									
Initial score	Number of patients with three-month score of							Total number of patients	Initial score	Number of patients with three-month score of							Total number of patients
	≤15	16	17	18	19	20	NI			≤15	16	17	18	19	20	NI	
≤15	10	2	3	3		8	1	27	≤15	10	2	2	4	—	1	6	25
16	—	1	—	—	3	6	3	13	16	—	2	—	3	1	—	3	9
17	1	2	1	5	1	4	5	19	17	2	1	2	2	4	3	4	18
18	—	—	1	1	2	10	3	17	18	—	—	—	6	2	2	2	12
19	—	—	—	—	2	11	3	16	19	—	1	1	2	3	7	3	17
20	—	—	—	—	1	18	5	24	20	1	—	1	1	1	9	4	17
NI	—	—	—	—	1	—	6	7	NI	—	—	—	1	—	—	8	9

Figure 2. Comparison of initial and three-month activity scores (a) Direct referral group (n=123). (b) Control group (n=107). NI=no information given.

scores for both groups were 4.9 (median 5—that is, remaining the same). At three months the mean assessment score of the direct referral group was 7.4 (median 8—that is, much better) compared with 6.1 (median 6—that is, a little better) for the control group. The differences between the groups at three months was statistically significant, as indicated by the difference between the means ($P<0.001$) and the Mann Whitney test ($P<0.001$).

General practitioners and physiotherapists were asked to give their assessments of progress using the same scale, but a disappointingly low proportion of patients returned to see their general practitioners at the appropriate time, and of course not all patients received physiotherapy. Where these assessments were available they were broadly in accordance with the patients' own assessments, the physiotherapist taking the most optimistic view of the patient's progress, followed by the general practitioner, and the patient himself having the most pessimistic view.

Patients' own assessments of their progress at one month after admission to the trial were also examined. In the direct referral group 107 patients (87 per cent response) gave a mean score of 7.0, compared with a mean score of 5.5 from 82 patients (77 per cent response) in the control group—a statistically significant result ($P<0.001$). General practitioners also assessed some patients at the one-month stage, including one non-responder in the direct referral group and six non-responders in the control group; in addition, two other non-responders in the control group completed questionnaires at three months. The use of this information should tend to overestimate the progress of the control group (as general practitioners tended to be more optimistic than patients, and patients' later scores also tended to be higher). When the general practitioners' assessments for the non-responders at one month were

Table 4. Patients' own assessments of progress at three months.

Assessment (score)	Direct referral group (n=123)	Control group (n=107)
	Number (%)	Number (%)
'Completely better' (10)	20 (21)	6 (8)
'Very much better' (9)/'Much better' (8)	34 (35)	17 (22)
'Moderately better' (7)/'A little better' (6)	16 (16)	19 (25)
'Remaining the same' (5)	19 (20)	17 (22)
'Moderately worse' (4)/'A little worse' (3)	7 (7)	14 (18)
'Much worse' (2)/'Very much worse' (1)	1 (1)	4 (5)
Patients giving no information	26	30

included, where available, the mean for the direct referral group was unchanged at 7.0 based on 88 per cent of patients in the group, compared with 5.6 based on 84 per cent of the control group. This difference is statistically significant ($P<0.001$).

The patients who did not respond to the questionnaire at three months could have made more progress or less progress than the responders, thus biasing the results. However, in each group the non-responders were broadly similar to the responders in terms of age, sex, diagnosis and site. Non-responders in the control group had one third fewer referrals to outpatient clinics than expected. The only effect of this was a slight underestimation of the improvements in the control group.

Some non-responders provided information about their rate of progress on entry. Non-responders in the

direct referral group had higher initial activity scores than responders but similar patient assessment scores, while non-responders in the control group had similar initial activity scores but higher patient assessment scores. A partial allowance for the effect of this was made as follows. To each of the non-responders who provided an activity score at one month (or failing that, initially) was ascribed the mean three-month score of full responders with the same one-month (or initial) score. The mean for this group was ascribed to the non-responders who answered no questionnaire at all. The estimated improvement in activity scores for the direct referral group was 1.6 instead of 1.7, whereas the improvement for the control group stayed the same at 0.7. The difference remained statistically significant ($P < 0.01$). A similar calculation estimated the effect of non-responders on patient assessment scores at three months. The score for the direct referral group was unchanged at 7.4, while that for the control group increased from 6.1 to 6.3. The difference remained statistically significant ($P < 0.001$).

Return to work

The two groups were similar in the numbers off work initially (27 patients in the direct referral group, 28 in the control group). Information about the return to work was obtained in all cases except two. During the first month nine patients in each group returned to work, and during the next two months a further seven direct referral patients and eight control patients returned to work.

All 27 patients in the direct referral group who were off work on entry received physiotherapy; 80 per cent of those who returned to work did so within one week of treatment terminating. This effect was not observed in the control group.

Discussion

The applicability of the trial to services elsewhere needs to be considered. Fewer patients were referred for physiotherapy than would be the case in an established service, because of the practical difficulties of a controlled trial and the non-availability of hospital transport. The patients thus excluded may not have been similar to those referred, but the latter seemed to be broadly comparable with those studied elsewhere,^{4,6} although the proportion of people aged over 65 years in west Cornwall is 20 per cent compared with a national average of 15 per cent. However, caution should be exercised in extrapolating the findings of the trial to services with substantially higher referral rates, most patients having been referred at an annual rate of five per 1,000 practice population. The effect of an open-access scheme in a district with short waiting time for orthopaedic consultant outpatient clinics may be less marked, although such districts are probably exceptional.⁵

Use of consultant outpatient clinics

The trial confirmed that patients with open access to the physiotherapy service made much less use of consultant outpatient services (which were working under considerable pressure). For every 100 patients in the direct referral group, 17 were referred for related conditions in the six months after entry. For every 100 patients in the control group, 56 were similarly referred. This, naturally, has implications for the orthopaedic outpatient department. On average, 173 patients per year were referred to the trial. If these 173 patients had all been in the direct referral group, 25 of them would probably have been new referrals to the orthopaedic outpatient department with related conditions, whereas if they had all been in the control group 94 referrals could have been expected. The difference of 69 referrals would represent just over 5 per cent of the annual rate of new referrals to the Orthopaedic and Trauma Out-Patient Department of West Cornwall Hospital which sees about 1,300 new patients per year. But for the constraints of the trial, the referral rate would almost certainly have been higher and therefore the effect on the orthopaedic department would also have been more pronounced.

Use of physiotherapy services

Substantially more of the direct referrals had physiotherapy than the controls. Furthermore, patients in the direct referral group obtained physiotherapy quickly, whereas referred patients in the control group waited a considerable time, only 20 per cent obtaining physiotherapy within 28 days. These delays were due to the timing of general practitioners' referrals and the patients' subsequent wait to be seen in consultant outpatient clinics. However, it should be noted that 40 per cent of the patients in the trial had long-standing conditions.

About one third of the control group patients who were referred to consultant outpatient clinics did not go on to receive physiotherapy. There are several possible reasons for this; physiotherapy was no longer appropriate because the condition had worsened or changed since entry to the trial; physiotherapy was no longer required because recovery had occurred; the patient was no longer willing to accept physiotherapy; alternative treatment was preferred; the personal preference of the consultant was not to refer; referral was not justified. However, there can be no real comparison of the opinions on justification of referral between the general practitioner and outpatient consultant as so much time elapsed between entry to the trial and outpatient clinic attendance.

No evidence was produced to support the belief that courses of physiotherapy given under a direct referral scheme would be shorter, but it is important to remember that the control patients who received physiotherapy formed a selected subgroup.

Rate of recovery

The average improvements in activity scores for the two groups showed a difference in favour of the direct referral group at three months. This information is self-reported, and we did not validate the methods that we used. However, other studies have validated some aspects of our methods. The principle of numerical indexing has been validated by other assessors using their own categories and techniques of professional observation,^{7,8} professional assessment⁹ and professional interview schedule.¹⁰ Sheikh and colleagues⁹ found some correlation between patients' statements about their activities and the corresponding professional assessments, while Garrad,¹⁰ in validating a questionnaire on patients' activities, found good agreement between patients' statements and their medical records.

Information from the activity scores was matched by the patients' own assessments, the direct referral group again making better progress. These assessments correlated well with corresponding assessments by general practitioners and physiotherapists, where these were available.

Although the response rates at three months were 78 and 72 per cent respectively for the direct referral group and the control group, an analysis of the non-responders did not reveal any major sources of bias, and after making some allowance for these non-responders the results were substantially unchanged.

Taken as a whole, the data support the contention that patients make more rapid recoveries under an open-access scheme.

Return to work

Little difference was found between the groups in the amount of time off work, although we did note that the timing of return to work in the direct referral group appeared to be related to the termination of physiotherapy. Our numbers were small, and no firm conclusions could be drawn. The benefit to society of an early return to work should not necessarily be assumed, as we retrospectively discovered that we had unwittingly effected a rapid functional recovery in respect of a local burglar.

Conclusions

It will be seen that three of the four benefits claimed for an open-access physiotherapy service have been supported: patients made less use of consultant outpatient clinics, they received physiotherapy promptly, and they recovered more rapidly. The trial showed, however, that the amount of treatment was not reduced and although the numbers were small, we did not observe that the service had any effect on patients' return to work.

Patients' own expenses and the cost to society of their disabilities, although undoubtedly important issues, are difficult to measure. Nevertheless, even without such

considerations the results of the trial demonstrated that a properly run open-access physiotherapy service is an effective means of providing health care.

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Copies of the full report (price £1), are available on request.

The effects of dogs on human health

As part of a general review of the epidemiology and control of human health hazards connected with dogs, data on incidence, risk factors and financial costs have been assembled for dog bites and dog-associated accidents. They suggest that about 214,000 dog-associated injuries receive hospital treatment in England and Wales each year, of which bites account for over 97 per cent. However, dog bites probably cost less in financial terms than dog-associated road traffic accidents, because of the damage to property which the latter cause.

Source: Baxter DN. The deleterious effects of dogs on human health: dog-associated injuries. *Com Med* 1984; **6**: 29-36.