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Are occupational therapists more effective than social workers when assessing frail older people? Results of CAMELOT, a randomised controlled trial

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Abstract

Objectives: to compare the effectiveness of occupational therapist-led assessments of older people on dependency and service costs with that of social worker-led assessments.
Design: pragmatic community-based randomised controlled trial over 2 years 4 months.
Setting: Cambridgeshire, UK.
Participants: 321 older people aged 65 and over living in their own homes and 113 carers.
Intervention: participants were randomised to two groups, to receive either occupational therapist-led or social worker-led assessment.
Outcome measures: primary outcome was dependency (Community Dependency Index). Secondary outcomes included quality of life scores (EQ-5D) and psychological outlook (Perceived Stress Scale (PSS)). Outcome measures for carers included Carer Assessment of Difficulty Index (CADI), PSS and EQ-5D, collected at baseline, 4 and 8 months. Resource use data were collected from professional practice records, participants and carers at final follow-up.
Results: 264 (82%) of the randomised participants completed the study. No between-group statistically significant differences were found, except that carers in the occupational therapist arm had significantly better EQ-5D scores at the 8 month follow-up (thermometer $P=0.03$) and in the social worker arm better CADI scores on stress ($P=0.047$) and amount of caring ($P=0.049$).
Conclusions: there was no clear difference in patient-centred effectiveness measures between occupational therapists and social workers in assessing frail older people and their carers in the community. More extensive use of primary care health services by occupational therapists may have contributed to the differences in EQ-5D scores for carers. Delays in making occupational therapy assessments and in completing recommended housing adaptations may have contributed to these negative findings.

Keywords: *randomised controlled trial, occupational therapy, older people, assessment, community, elderly*

Introduction

Two key themes have informed care in the community policies for older people in the UK over the last 10 years: firstly, promoting non-institutional forms of care for those in need and, secondly, maximising an individual's independence in the community [1, 2]. While some evaluative research has been undertaken into the most appropriate and most cost-effective ways of meeting these aims [3–5], very little research exists that specifically seeks to evaluate the contribution to community care of occupational therapy [6–8].

Recent UK government policy drivers for older people have been conceptualised within the National Service Framework for Older People [2]. Within this framework, a

needs-related Single Assessment Process has been introduced which aims for 'more effective use of professional resources' [9]. Occupational therapists work within both health and social care systems, while social workers are primarily agents of social care. While both assessments share a focus on keeping frail older people in the community, their choice of resources usually has different emphases. Occupational therapy interventions aim to minimise either an individual's dependence on others, particularly in relation to self-care, or the ongoing physical impact of caring on the carer. This is achieved by the provision of equipment or adaptation of the environment to optimise independence in completing a particular activity, for example, the installation of a level access shower or stairlift, rather than providing extra care services or improving muscle function. In contrast, social workers often recommend personal care assistance to meet the needs of their clients in relation to care in the community policies. The relative effectiveness of these differing approaches is unknown.

The primary objective of this study was therefore to establish whether, on a range of clinical outcomes, primarily dependency in self-care, there was any clinically significant difference between occupational therapy and social work-led assessments for frail older people and their carers.

Methods

Participants

The Cambridge research ethics committee approved this single-blind randomised controlled trial. All participants and carers gave their written informed consent.

People over 65 years were considered for the study following referral to either Cambridgeshire Social Services (social work or occupational therapy service) or Lifespan Healthcare Trust Primary Care occupational therapy team for assessment for services to maintain them in the community. Participants were excluded only when they required an urgent response. Subjects with dementia were eligible providing they had an informal carer able to give consent. Informal carers of randomised subjects were also approached to provide data both on themselves and the index subject if that person was unable to do so. Informal carers were defined here as relatives or friends, who regularly provided unpaid help with daily living activities to the participant, as defined by the participant or sometimes by the referrer. They were invited to take part if present at the participant recruitment interview.

Study design

Baseline measurements were completed in the participant's home within 5 days of receipt of referral by the research team. The primary outcome measure was assessed using the Community Dependency Index (CDI) [10] (range 0–100, higher scores denote greater independence), measuring the individual's ability within their environment to carry out a range of daily living tasks relating to self-care. As Eakin and Baird [10] explain, 'In measuring outcome, the CDI emphasises the changes made to the environment which may reduce dependence rather than on the changes made to the person which may reduce disability' (p. 18).

A number of other measures were used, aimed at detecting potential effects resulting from the general approach favoured by social workers. EQ-5D [11] provided a weighted health index (range 1 to –0.59,) and a self-rated 'thermometer' (range 0–100) to assess health status. In both instances higher scores denote greater well-being. Well-being was also measured using the Perceived Stress Scale (PSS) [12] (range 0–56, higher scores indicate higher levels of perceived stress).

Participating informal carers completed the Carers' Assessment of Difficulties Index (CADI) [13] (range 0–90, high scores denote more tasks and increased stress), Subjective Burden Scale (SBS) [14] (range 0–7, higher scores denote more strain), EQ-5D and the Perceived Stress Scale.

Participants were then randomly assigned by opening the next in a sequence of centrally held, numbered, opaque, sealed envelopes. This was done separately by the principal investigator (SS). The randomisation sequence was generated using standard random number tables. The occupational therapist (OT) arm subjects received an occupational therapy assessment, undertaken in the elderly person's home. The social worker (SW) arm received a social work assessment, often undertaken by telephone (39%). Both the occupational therapist and the social worker used standard in-house assessment forms to complete and record the assessment, after which appropriate interventions were initiated.

Follow-up data were collected on each participant in their own home at 4 and 8 months, repeating the measures administered at baseline. Follow-up was undertaken by the study researcher, who remained blind to group assignment.

The paper by Flood *et al.* will report on the resource requirements of the two interventions [15].

Statistical analysis

To have statistical power of 80% to show a clinically important difference in the CDI of eight points, based on a two-tailed test (α=0.05), the trial aimed to include 300 participants (150 in each arm). Recruitment was higher on the assumption that 30% of participants would be lost to follow-up. Analysis was performed on an intention-to-treat basis.

Analysis consisted primarily of between-group comparisons using Chi-squared tests for categorical outcome measures, independent sample *t*-tests (Mann–Whitney tests where data were not normally distributed), and survival analysis using Kaplan–Meier plots with a log rank test of significance. Analysis of covariance was used to adjust for baseline differences in the relevant outcome measure.

Subset analysis of participants with initial scores of 60 or more on the CDI was undertaken to investigate whether subjects who were less frail responded differently to the interventions following assessment. In developing the CDI, Eakin [16] suggested that this score was perhaps predictive of those clients likely to benefit most from occupational therapy.

All analyses were performed with SPSS version 10.0.

Results

The trial profile (Figure 1) shows the flow of participants during the trial. A total of 321 participants were recruited

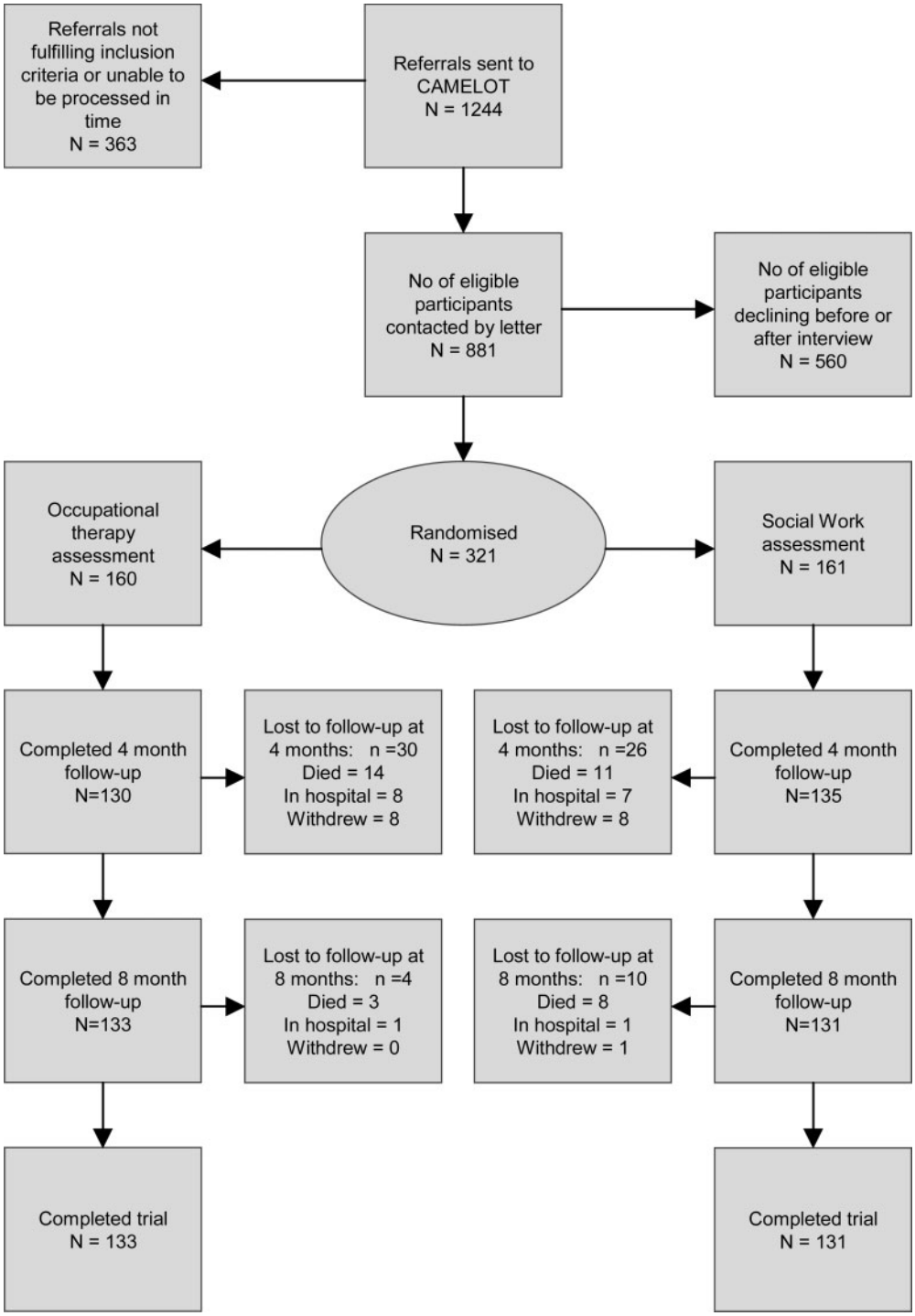

Figure 1. Flow diagram showing patient flow through the trial. Six participants in the SW arm and seven participants in the OT arm, who were too unwell to be seen at the 4 month follow-up, were seen at 8 months.

between February 2000 and March 2001 with final follow-up interviews in November 2001.

Death of a participant was the main reason for loss to follow-up, but in several instances subjects withdrew because their health or that of their spouse had deteriorated.

Randomisation produced groups that were similar at baseline (please see the table Appendix 1 in the supplementary data on the journal website http://www.ageing.oupjournals.org).

Demographic baseline characteristics for informal carers in the two groups were also similar (Appendix 2 on the journal website http://www.ageing.oupjournals.org). However, there were potentially important baseline differences by chance in several of the measures used as outcome indicators. These have been adjusted for using analysis of covariance. Recruitment of smaller numbers of carers has meant the statistical power for the analysis of this data set is lower than for patient participants.

Table 1. Comparisons of outcome measures at 4 and 8 months for participants

	4 month follow-up				8 month follow-up			
	SW arm; $n=135$	OT arm; $n=130$			SW arm; $n=131$	OT arm; $n=133$		
	Mean (SD)	Mean (SD)	*P*	Mean difference (95% CI)	Mean (SD)	Mean (SD)	*P*	Mean difference (95% CI)
CDI	67.1 (18.6)	68.2 (18.7)	0.64	−1.1 (−5.6–3.4)	65.1 (20.0)	63.3 (20.2)	0.49	1.73 (−3.1–6.6)
EQ5D health state	0.47 (0.27)	0.47 (0.28)	0.60	−0.02 (−0.01–0.05)	0.49 (0.29)	0.45 (0.29)	0.29	0.04 (−0.03–0.11)
EQ5D thermometer	60.2 (21.1)	58.9 (19.1)	0.63	1.22 (−3.8–6.3)	62.5 (19.9)	58.8 (15.6)	0.10	3.74 (−0.74–8.2)
PSS	23.3 (8.7)	23.0 (9.0)	0.81	0.3 (−2.0–2.6)	23.2 (8.7)	24.7 (7.5)	0.17	−1.5 (−3.6–0.63)

Follow-up scores showed that both arms made similar gains across the range of outcome measures at 4 months but this gain was not sustained at 8 months. There were no statistically or clinically significant differences between the groups with or without adjustment for baseline differences (Table1).

Survival analysis can be used to examine the pattern of mortality in two study groups. Such analysis showed no significant differences in the pattern of survival between the two arms (log rank test, $P=0.85$).

Data collection from case notes showed that the two arms had different patterns of service provision following assessment. In the OT arm, 58% of participants were also intentionally seen by a social worker, while 43% in the SW arm were also intentionally seen by an occupational therapist. Both arms made similar use of home care services and general practitioner (GP) services but participants in the OT arm made greater use of other primary care services such as physiotherapy, speech therapy and district nursing. The OT arm received more equipment and housing adaptation recommendations, although only 18% of the latter had actually been completed by the end of the trial. All OT arm assessments took the form of a face-to-face visit in the person's home, compared with 61% in the SW arm. Admission to acute beds was similar between arms (SW arm, $n=30$, total 960 days; OT arm, $n=39$, total 726 days) but in the OT arm higher use was made of rehabilitation beds (SW arm, $n=2$, total 16 days; OT arm, $n=8$, total 369 days).

Subgroup analysis of participants with initial scores of 60 or more on the CDI showed no between-group differences in the CDI score at 4 months but those in the SW arm scored higher ($P=0.03$) at the 8 month follow-up (mean difference 6.0; CI 0.6–11.5).

When adjusted for baseline values, significant differences were found between the two arms on the carer scores in favour of the SW arm in both elements of the CADI at the 8 month follow-up and in favour of the OT arm on the EQ-5D thermometer (Table 2).

Discussion

The effectiveness of community-based assessments of the needs of older people underpins the success of government-led measures to sustain their continued living in the community. This trial has examined a sample of older people in the community and has found no differences between social work and occupational therapy allocated subjects on any key clinical outcome measure. Functional independence was not improved to the extent that home care services could be reduced. At the 8 month follow-up, neither arm had maintained the improvement in CDI scores recorded at 4 months, a finding similar to other community-based studies [17]. The general absence of between-group differences could be interpreted as indicating that the important differences in approach between occupational therapists and social workers are not translated into practical effects, though the extensive cross-referral between the arms (permissible within the pragmatic design) provides one alternative explanation.

The occupational therapy emphasis on improving independence in self-care by the provision of aids or adaptations led us to hypothesise that participants in the OT arm might be expected to have improved CDI scores after intervention compared with those in the SW arm, but this was not found. Indeed, in the subset analysis, the SW arm did significantly better. A possible explanation for this finding is that social work interventions are put in place relatively quickly with immediate client benefit. Some elements of occupational therapy, such as small items of equipment and strategies for moving and handling, are also provided quickly and their effect could be reflected in the 4 month scores. However, some occupational therapy recommendations, particularly adaptation work, can take months to be acted on, with possible adverse effects not only on participants' CDI scores but also on their well-being scores, stemming from stresses associated with unmet expectations. Occupational therapy effectiveness may therefore have been underestimated, with 82% of adaptations not completed before the end of the trial.

These results therefore raise questions about whether occupational therapy resources could be targeted to better effect. One question is whether such resources should be targeted at a less frail group of service users perhaps more likely to benefit in terms of rehabilitation and functional improvement, or in maintaining independence. Another question is whether services could be reorganised to deliver adaptations more quickly.

Within the OT arm, two areas of service receipt were clearly different from those in the SW arm. These were the number of recommendations for housing adaptation and the higher levels of provision from other community health care professionals. These patterns of service referral probably reflect inter-professional differences in assessment and

Table 2. Comparisons of outcome measures at 4 and 8 months for carers

	4 month follow-up					8 month follow-up				
	SW arm; $n = 36$	OT arm; $n = 44$				SW arm; $n = 30$	OT arm; $n = 45$			
	Mean (SD)	Mean (SD)	*P*	Mean difference (95% CI)	*Point estimate (95% CI) [p]	Mean (SD)	Mean (SD)	*P*	Mean difference (95% CI)	*Point estimate (95% CI) [p]
CADI: Caring	54.2 (13.2)	49.8 (11.0)	0.14	4.4 (−1.5–10.4)		51.5 (12.6)	51.7 (10.5)	0.93	−0.27 (−6.0–5.4)	−4.3 (−8.5 to −0.02) [0.049]
CADI: Stress	52.0 (14.4)	48.0 (11.0)	0.23	4.0 (−2.6 to 10.5)		47.4 (13.8)	50.7 (12.2)	0.32	−3.2 (−9.8–3.3)	−5.2 (−10.3 to −0.06) [0.047]
EQ5D health state	0.69 (0.28)	0.77 (0.21)	0.13	−0.08 (−0.19–0.03)		0.65 (0.28)	0.79 (0.19)	0.01	−0.14 (−0.25 to −0.03)	−0.05 (−0.13–0.03) [0.194]
EQ5D thermometer	62.7 (18.2)	72.5 (16.2)	0.01	−9.8(−17.6 to −2.1)	−5.1 (−12.3–2.2) [0.17]	59.4 (18.5)	72.8 (16.9)	0.002	−13.4 (−21.8 to −5.1)	−9.0 (−17.2 to −0.8) [0.03]
PSS	28.0 (7.6)	24.7 (7.7)	0.06	3.3(−0.13–6.8)		26.2 (8.7)	25.2 (8.7)	0.65	1.0 (−3.2–5.1)	

*Results given for outcome measures where adjustment for baseline differences affected significance.

referral practices. Occupational therapy assessment was more frequently carried out in the person's home, leading to an increased probability of identifying additional or unmet health needs. Other studies have indicated the efficacy of assessments in the person's home rather than other settings in revealing otherwise unidentified health and social care needs [18]. Findings from Worth's study [19] also suggested that social worker assessments usually emphasised social care needs, while paying relatively little attention to client-articulated health needs. Such differences identified in the CAMELOT study also reflect the findings of Challis [20] that there was little evidence of health and social services 'jointness' in social work-led care management for the elderly. Despite these differences, increased activity by other health care workers recorded in the present study was not associated with measurable improvement in either self-care or health status of the participants.

Where stair-lifts or level access showers were recommended, complex inter-agency procedures militated against completing such adaptations within the time frame of the trial. Given the frailty of this group, questions are raised concerning the management of waiting lists and the relevance of the initial recommendation in a population whose functional level can deteriorate rapidly. This suggests the need for fast-track systems that would enable an older person to have such facilities installed within 3 months of initial assessment. Such a recommendation sits with the government's declared aims of keeping older people in their own homes [2, 21] and easing access to community equipment services [22].

Carers' CADI scores at 8 months were better in the SW arm than in the OT arm. This is less surprising given that social work interventions were in place whereas some occupational therapy interventions remained incomplete. Carers' EQ-5D self-rated health scores were considerably lower than those for the general population in their age group [23], reflecting the difficulties of this role for people who are often elderly themselves. Carers in the OT arm had significantly better scores than those in the SW arm on the EQ-5D thermometer at the 8 month follow-up. These findings should be interpreted cautiously given the multiple tests of significance performed. Nevertheless, given that the OT assessment apparently identified other health needs resulting in onward referral to a wider range of community health care professionals, this may have served to sustain these carers' self-assessed well-being. It could also reflect particular compensations for these carers in actively maintaining their family member in the community [24].

The outcomes of this trial suggest that social work and occupational therapy assessments were equally effective in maintaining older people in the community. Such parity has implications for the range of choices available to older people considering their self-care management strategies in relation to their own lifestyle priorities. However, for such choices to be supported, a review is needed of the allocation of types of interventions aimed primarily at promoting functional independence rather than maintaining function, whether through occupational therapy or social work. For this group of frail older people, it may be that preventing deterioration is a legitimate goal for intervention. Further

research is needed to identify the potential impact of a fast-track adaptation service on the ability of frail older people to remain in their own homes.

Key points

- There are no major outcome differences in functional independence and quality of life between older people assessed by social workers or occupational therapists.
- At the final 8 month follow-up, carers of clients in the SW arm of the trial had better outcomes in relation to the number and difficulty of caring tasks being undertaken while the OT arm of the trial had a superior quality of life score.
- Home modifications recommended by occupational therapists are often subject to marked delay.

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