Interdisciplinary inpatient care for elderly people with hip fracture: a randomized controlled trial

Research

Recherche

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Abstract

Background: Hip fractures in elderly people are associated with impaired function and ambulation and high rates of death and admission to institutions. Interventions designed to improve the outcomes of hip fracture (e.g., mobility and discharge to own home) that have incorporated interdisciplinary care have had mixed results. We compared the effectiveness of postoperative interdisciplinary care with that of usual care for elderly patients with hip fracture.

Methods: The study population consisted of 279 patients at least 70 years of age from the community and from nursing homes who underwent surgical repair of hip fracture at a university-affiliated acute care hospital. The subjects were randomly assigned to receive postoperative interdisciplinary care (n = 141) or usual care (n = 138) during their hospital stay. Interdisciplinary care included routine assessment and care by an internist-geriatrician, physiotherapist, occupational therapist, social worker and clinical nurse specialist, as well as twice-weekly interdisciplinary rounds to set goals for the patients and to monitor their progress. The primary outcome measure was the proportion of patients alive with no decline in ambulation or transfers in and out of a chair or bed and no change in place of residence at 6 months after surgery.

Results: At 6 months, 56 patients (39.7%) in the interdisciplinary care group and 47 (34.1%) in the usual care group were alive and had no decline from baseline in terms of ambulation, chair and bed transfers or place of residence (difference 5.6%, 95% confidence interval –5.6% to 17.0%). Multiple logistic regression analysis with adjustment for baseline factors showed no significant difference between treatment groups for the primary outcome measure at 3 months (p = 0.44) or at 6 months (p = 0.67). The initial length of stay in hospital was longer for patients receiving interdisciplinary care: 29.2 (standard deviation [SD] 22.6) v. 20.9 (SD 18.8) days ($p < 0.001$). However, the mean number of days spent in an institution (including hospital, inpatient rehabilitation and nursing home) over the 6-month follow-up period was similar in the 2 groups (p = 0.84). A subgroup analysis suggested a trend to benefit from interdisciplinary care in patients with mild to moderate cognitive impairment.

Interpretation: Postoperative inpatient interdisciplinary care did not result in significantly better 3- or 6-month outcomes in elderly patients with hip fracture.

Hip fracture is a serious consequence of osteoporosis and constitutes a major public health problem worldwide.[1,2] Most hip fractures occur in people over 70 years of age, and the incidence rises exponentially with increasing age.[1,2] Hip fractures in elderly people are associated with poor clinical outcomes, including a high mortality rate (10% to 28% at 6 months);[3,4] functional and walking disabilities, with fewer than half of those affected regaining their prefracture status;[5] and a high rate of admission to institutions, with up to 35% of community-living patients admitted to a nursing home within 1 year after fracture.[6]

Although several interventions are of proven benefit for patients with hip fracture (e.g., prophylactic antibiotics, anticoagulation and pressure-relieving mattresses),[7] studies of the effectiveness of inpatient interdisciplinary geriatric care have had mixed results.[8–19] Many of the studies of such care have been criticized for methodologic flaws, including small sample sizes, poorly matched treatment groups, heterogeneous populations (including patients without hip fracture) and incomplete follow-up.

Our objective was to compare the effectiveness of inpatient interdisciplinary care with that of usual care for elderly patients with hip fracture. Efforts to shorten the length of stay of patients with hip fracture in acute care hospitals have often resulted in worse long-term outcomes, including higher overall health care costs.[20–23] Therefore, unlike studies that have attempted to reduce the length of the hospital stay and that have focused on short-term outcomes, we provided an intensive intervention during the hospital stay, with the hope of improving longer-term outcomes. We anticipated that our interdisciplinary care intervention would increase length of stay. Therefore, we measured outcomes at 3 and 6 months after the hip surgery, since outcomes at the time of discharge could be influenced by differences between the groups in the average length of time from surgery. Furthermore, we felt that if benefits from the intervention could not be documented at 3 or 6 months, the incremental resources that would be required during the initial hospital stay would be of questionable value.

Methods

From June 1993 through March 1997, we recruited patients at least 70 years of age from the community and from nursing homes who underwent surgical repair of hip fracture at the Toronto Hospital (now part of the University Health Network), a 952-bed, university-affiliated hospital. Exclusion criteria were fracture occurring in an acute care hospital, pathologic fracture, multiple trauma, previous surgery on the fractured hip, expected survival less than 6 months, residence in a nursing home and dependence on at least one person for ambulation before the fracture, or residence outside metropolitan Toronto. Patients were excluded postoperatively if the surgery failed for technical reasons, if they required care in an intensive care unit or if there was no bed available on the interdisciplinary care ward. The study protocol was approved by the Toronto Hospital ethics review board.

Eligible patients were randomly assigned to receive interdisciplinary care (intervention group) or usual care (control group) on the basis of a stratified, computer-generated randomization scheme with a block size of 4. Patients were stratified on the basis of age (70 to 79 years or 80 years and older) and their place of residence at the time of admission (private residence or a retirement or nursing home). Orthopedic residents, who were blinded to block size, assigned the patients to treatment group according to sequentially numbered, sealed, opaque envelopes that were colour-coded by stratum.

Initial screening for eligibility and randomization were carried out by orthopedic residents. Within 48 hours of randomization, the research coordinator reviewed each case for compliance with the inclusion criteria and forwarded all questionable cases to an adjudication panel for review of eligibility. The panel consisted of an orthopedic surgeon, an internist and a physiotherapist who were not part of the research team, were not directly involved in the care of the patients and were blinded to the patients' group assignments.

To minimize the risk of contamination bias, interdisciplinary care and usual care were provided by separate staff on different wards. The principles of care on the interdisciplinary care ward included protocols and standardized orders to try to prevent problems common in elderly patients with hip fracture (e.g., delirium, urinary problems, constipation, pressure sores, venous thrombosis, polypharmacy, malnutrition and depression), early mobilization (full weight-bearing and twice-daily physiotherapy sessions Monday to Friday, whenever possible), early participation in self-care and individualized discharge planning (e.g., predischarge home visits, home care and additional rehabilitation in a rehabilitation facility). All nursing staff on the interdisciplinary care ward received specialized education about the care of elderly patients with hip fracture. A physiotherapist, occupational therapist, clinical nurse specialist and social worker assigned to the ward routinely assessed all study patients within 72 hours and gave priority to these patients. On the usual care ward, patients had access to allied health care professionals if a consultation was requested, but they had limited access to an occupational therapist or a clinical nurse specialist. Patients in the interdisciplinary care group received routine postoperative surgical care, as well as daily medical care by a senior internal medicine resident supervised by an internist-geriatrician. Those in the usual care group received routine postoperative surgical care only, which could include a geriatric consultation. During the study, only 11 (8.0%) of the patients receiving usual care were referred for a geriatric consultation. Staff in the interdisciplinary care ward held twice-weekly rounds to develop and monitor treatment plans, whereas the usual care ward had no such rounds. The staff on the interdisciplinary care ward worked together for a 10-month pilot period before the start of the study.

The main outcomes of interest were mortality rate and changes from baseline (prefracture) in ambulation, transfers in and out of a chair and bed, and place of residence. These outcomes were combined into a primary outcome measure of the proportion of patients alive with no decline in ambulation, transfers or residential status. Ambulation and chair and bed transfers were measured by the corresponding 5-level domains of the modified Barthel Index.[23] Residential status was defined as follows: level 1, own home; level 2, relative's home or retirement home; and level 3, nursing home, acute or chronic care hospital, or rehabilitation hospital.

Outcome was assessed at 3 and 6 months after the surgical repair, with the 6-month outcome designated as the a priori primary analysis. All follow-up assessments were conducted by research assistants blinded to group assignments. Interviews were attempted with each patient and a caregiver. For the primary analysis we used information from the source judged by the research assistant as most reliable. Other outcomes included 3- and 6-month modified Barthel Index scores,[23] instrumental activities of daily living (IADL) scores,[24] and 6-month health care utilization, based on chart reviews, workload time measurement units documented by allied health care professionals and monthly reports by caregivers.

Student's *t*-tests were used to compare continuous values. We checked the validity of these comparisons with bootstrap

hypothesis tests.[25] Because there were no important differences between the 2 sets of results, we report only the results of the *t*-tests. Proportions were compared by means of the χ^2 test, and 95% confidence intervals (CI) for differences in proportions were constructed by means of the normal approximation. Fisher's exact test was used to compare distributions of discharge destinations between treatment groups. Logistic regression was used to obtain crude odds ratios as well as to estimate the effect of the intervention on the combined primary outcome measure after adjustment for baseline differences between treatment groups. The variables included in the regression were age, sex, comorbidity, baseline use of a walking aid, baseline Barthel Index score,[23] baseline Short Mental Status Questionnaire (SMSQ) score,[26,27] baseline place of residence, type of surgery and treatment group. In the multiple regression analysis, the bootstrap method was used to obtain bias-corrected (accelerated) confidence intervals for the odds ratios, as a check on the Wald-based confidence intervals.[25] To investigate the possibility of variation in the effect of the intervention across clinically important subgroups of the study population, we fitted logistic regression models with terms for the intervention, the subgroup, and the interaction between the intervention variable and the subgroup.[28] Separate analyses were done for each of 3 subgroup variables: baseline cognitive status (SMSQ scores 0 to 2, 3 to 6, and 7 or more),[23,24] baseline functional status (Barthel Index scores 0 to 60, 61 to 90, and 91 or more),[19] and baseline age and place of residence (age 70 to 79 or 80 or older and living in a private residence or institution at the time of the fracture). In each analysis, a likelihood ratio test comparing models with and without the interaction term was used to assess whether the effect of the intervention was the same in each subgroup.[28]

We computed the sample size a priori on the assumption that a third of the patients in the control group and half of those in the intervention group would be alive and have no change in ambulation, transfers or place of residence at 6 months. We needed 135 patients per treatment group to detect a difference of this magnitude (with 80% power and a 2-sided α of 5%).[29]

Results

Of the 689 potential participants, 409 were ineligible, were not identified in time for randomization or refused to participate (Fig. 1). Of the 280 patients who underwent randomization, 1 withdrew. The 279 patients who completed the study consisted of 141 who received interdisciplinary care and 138 who received usual care (Fig. 1). Of the patients who underwent randomization, 41 cases were sent to the adjudication panel for review of eligibility, and 17 (8 in the intervention group and 9 in the control group) were deemed ineligible. The results were unchanged when these 17 patients were excluded from the analyses, so we present here the results for all 279 patients.

There were no statistically significant differences between the intervention and control groups for any of the baseline characteristics ($p \geq 0.20$) (Table 1). Significantly more patients in the intervention group than in the control group received care from an occupational therapist, social worker or dietitian (Table 2). Although most patients in both groups received physiotherapy, those in the intervention group received significantly more hours of physiotherapy ($p < 0.001$).

A greater proportion of patients in the intervention group than in the control group were alive at 6 months and had no decline in ambulation or chair and bed transfers and no change in place of residence (56 [39.7%] v. 47 [34.1%], difference 5.6%, 95% CI –5.6% to 17.0%). The proportion of 6-month survivors with a decline in at least 2 main outcomes (ambulation, transfers or place of residence) was similar in the 2 groups (46/124 [37.1%] and 44/117 [37.6%], difference –0.5%, 95% CI –12.7% to 11.7%), as was the proportion with a decline in all 3 main outcomes

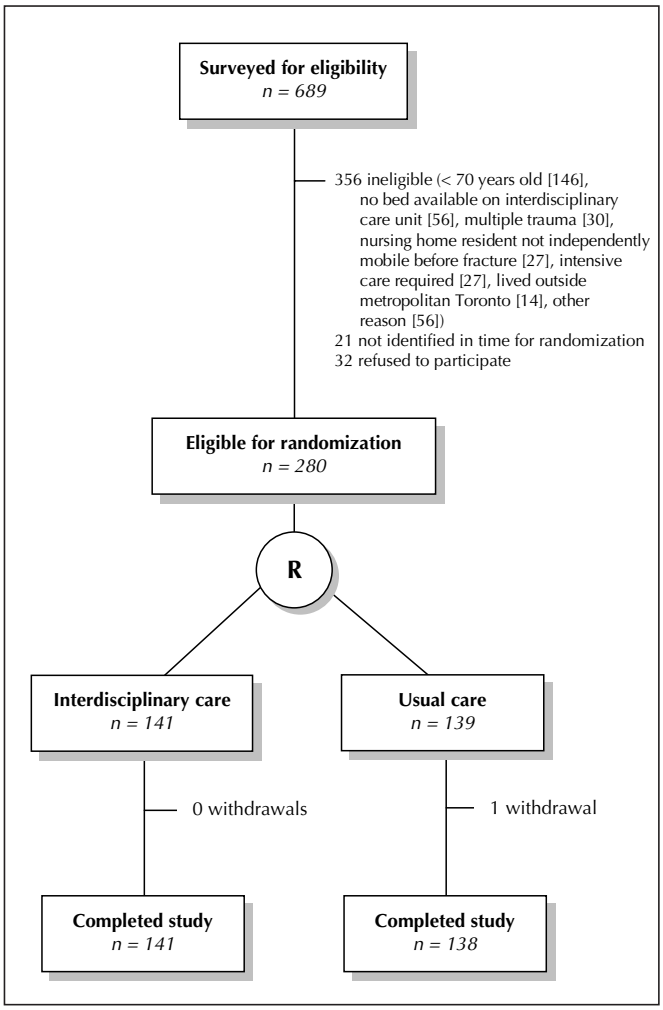

Fig. 1: Flow of study participants through selection and intervention protocols. Interdisciplinary care consisted of routine postoperative surgical care plus daily medical care by an internist-geriatrician, and regular care by a physiotherapist, occupational therapist, social worker and clinical nurse specialist, as well as twice-weekly interdisciplinary rounds to set goals and monitor patients' progress. Usual care consisted of routine postoperative surgical care, with access to geriatric consultation and allied health care professionals if requested; access to occupational therapists and clinical nurse specialists was limited. R = randomization.

Table 1: Characteristics of 279 elderly patients receiving inpatient interdisciplinary or usual care after surgery for hip fracture

Characteristic	Group; no. (and %) of patients*†	
	Interdisciplinary care *n = 141*	Usual care *n = 138*
Mean age (and SD), yr	83.8 (6.9)	84.6 (7.3)
Female	109 (77.3)	114 (82.6)
Mean duration of education (and SD), yr	9.3 (5.0)	8.6 (5.2)
Living situation		
Alone in own home	33 (23.4)	32 (23.2)
With another person in own home	31 (22.0)	32 (23.2)
Relative's home	11 (7.8)	14 (10.1)
Retirement home	28 (19.9)	20 (14.5)
Nursing home	38 (27.0)	40 (29.0)
Functional and cognitive scores		
Mean Barthel Index score‡ (and SD)	82.9 (20.6)	84.1 (19.1)
Mean IADL score§ (and SD)	5.2 (2.6)	5.2 (2.3)
Mean SMSQ score¶ (and SD)	5.0 (3.4)	4.9 (3.4)
Functional and medical indicators		
Use of a walking aid	72 (51.1)	72 (52.2)
Visual impairment**	51 (36.2)	50 (36.2)
Auditory impairment**	52 (36.9)	50 (36.2)
Mean no. of coexisting conditions†† (and SD)	2.0 (1.5)	2.1 (1.5)
Mean no. of medications (and SD)	3.8 (2.9)	3.6 (2.8)
Fracture type		
Intertrochanteric	75 (53.2)	84 (60.9)
Subcapital	66 (46.8)	54 (39.1)
Mean time to surgery (and SD), d	1.3 (1.0)	1.4 (1.3)
Surgical procedure		
Pin and plate	80 (56.7)	87 (63.0)
Hemi-arthroplasty	45 (31.9)	38 (27.5)
Other	16 (11.3)	13 (9.4)

Note: SD = standard deviation, IADL = instrumental activities of daily living, SMSQ = Short Mental Status Questionnaire.

*Unless otherwise stated.

†Because of rounding, not all percentages sum to 100. None of the differences between treatment groups was statistically significant ($p \geq 0.20$).

‡The modified Barthel Index is a measure of basic activities of daily living.[23] The score ranges from 0 to 100, higher scores indicating greater independence.

§IADL scores were measured according to the Lawton and Brody scale.[24] The score ranges from 0 to 8, higher scores indicating greater independence. IADL were assessed only for patients living in the community.

¶The SMSQ, which measures cognition, is a modified version of Pfeiffer's Short Portable Mental Status Questionnaire.[26,27] The SMSQ was measured 1 week after surgery. The score ranges from 0 to 10, scores less than 7 indicating cognitive impairment.

**Vision and hearing were each assessed on a 4-point questionnaire with responses ranging from no impairment to complete blindness or deafness (while wearing corrective lenses or hearing aids respectively). Responses other than "no impairment" were collapsed into the impairment category.

††Coexisting conditions excluded conditions associated with visual and auditory impairment.

(12/124 [9.7%] and 10/117 [8.5%], difference 1.2%, 95% CI –6.1% to 8.4%). More patients in the intervention group than in the control group were alive at 3 months and had no decline in ambulation, transfers or residential status (46/138 [33.3%] v. 32/130 [24.6%], difference 8.7%, 95% CI –2.1% to 19.5%). There were no statistically significant differences between treatment groups for each of the main outcomes at 3 and 6 months (Table 3). There were also no statistically significant differences between treatment groups at 3 and 6 months in mean total Barthel Index scores (62.0 v. 62.4 and 65.0 v. 65.7 for the intervention and control groups respectively), mean Barthel ambulation and transfers domain scores, and mean IADL scores.

Multiple logistic regression adjusting for baseline characteristics showed no significant difference between treatment groups for the primary outcome measure at 6 months ($p = 0.67$) or at 3 months ($p = 0.44$). In the adjusted analysis (Table 4), only lower age and higher SMSQ scores remained as statistically significant independent predictors of better clinical outcomes. Results with the bootstrap technique led to the same substantive conclusions (results not shown).

The mean initial length of stay in hospital was significantly longer for the intervention group than for the control group (29.2 [SD 22.6] v. 20.9 [SD 18.8] days; $p < 0.001$). Seven (5.0%) of the patients in the intervention group and 13 (9.4%) of those in the control group died during the initial hospital stay (difference –4.4%, 95% CI –10.5% to 1.6%), including one in each group who died after being in hospital for more than 3 months. After the initial hospital stay, there were no significant differences between treatment groups in emergency department visits, outpatient physician visits or home care admissions.

For patients who had been admitted from residences other than nursing homes, there were significant differences between treatment groups in destination at time of discharge from hospital (Table 5). However, for these patients, there was no significant difference between treatment groups in place of residence at 6 months ($p = 0.13$). The mean number of total days spent in institutions (including acute hospitals, rehabilitation hospitals and nursing homes) over 6 months was similar for the 2 groups (111.0 and 110.0 days, $p = 0.84$).

Subgroup analyses on the stratification criteria of age and place of residence at baseline, as well as on baseline functional status, did not demonstrate significant variation in the effect of the intervention across the subgroups ($p > 0.75$). The subgroup analysis based on cognitive status showed that patients with mild to moderate cognitive impairment (SMSQ scores of 3 to 6) had the most benefit from interdisciplinary care (p for interaction = 0.08). For this subgroup of patients, 47% (17/36) receiving interdisciplinary care and 24% (9/38) receiving usual care were alive and had no decline in ambulation, transfers or residential status at 6 months ($p = 0.03$).

Interpretation

Postoperative interdisciplinary geriatric care in an acute care hospital did not result in significantly better 3- and 6-month outcomes in patients 70 years of age or older with hip fracture. We found no significant differences in the combined outcome of the proportion of patients who were alive and had no change in ambulation, transfers or residence, or in any of these outcomes individually. In addition, no differences were found in total Barthel Index or IADL scores.

The CI for the primary outcome measure (–5.6% to 17.0%) was too wide to allow for a definitive statement of treatment equivalence and allows for the possibility of a clinically important effect that we did not have sufficient power to detect. Although differences were found between the treatment groups with respect to discharge destinations (Table 5), these should be interpreted cautiously because they are probably due, at least in part, to differences in initial lengths of stay in hospital; no significant differences in residential status were found at 3 or 6 months after initial surgery.

Previous studies of inpatient interdisciplinary geriatric care after surgery for hip fracture have yielded conflicting results. Of 3 prospective cohort studies of inpatient rehabilitation after an acute care hospital stay, 2 failed to demonstrate clinical benefits at 6 months,[30,31] and one showed only modest benefits.[32] Five randomized trials

Table 2: Care by allied health care professionals during initial stay in hospital

	Type of care; no. (and %) of patients		Type of care; mean time/patient (and SD), h†	
Type of professional	Interdisciplinary care *n = 141**	Usual care *n = 138*	Interdisciplinary care *n = 141*	Usual care *n = 138*
Physiotherapist	140 (99.3)	135 (97.8)	14.2 (11.7)‡	5.7 (4.0)
Occupational therapist	140 (99.3)§	10 (7.2)	10.8 (7.6)‡	3.3 (2.2)
Social worker	140 (99.3)§	75 (54.3)	5.9 (4.5)	6.3 (3.1)
Dietitian	34 (24.1)§	19 (13.8)	3.7 (1.6)	4.1 (2.9)
Speech–language pathologist	9 (6.4)	9 (6.5)	4.3 (2.9)	6.4 (5.4)

*One patient died shortly after randomization, so received no care from a physiotherapist, occupational therapist or social worker.
†This column represents data for only patients who received some care from a given type of allied health care professional (i.e., patients not assessed or treated by that type of health care professional were not considered in calculating the mean). This variable represents direct and indirect patient care, according to time units documented by each health care professional.
‡Among patients receiving physiotherapy and occupational therapy, those in the intervention group received significantly more hours of care per patient ($p < 0.001$ and $p = 0.009$ respectively).
§Significantly greater proportion of patients in the intervention group received care from an occupational therapist ($p < 0.001$), a social worker ($p < 0.001$) or a dietitian ($p = 0.028$).

Table 3: Main outcomes at 3 and 6 months

	Group; no. (and %) of subjects		
Variable	Interdisciplinary care	Usual care	Difference* (and 95% CI)
Death†			
3 mo	10 (7.1)	12 (8.7)	–1.6 (–7.9 to 4.7)
6 mo	17 (12.1)	21 (15.2)	–3.1 (–11.2 to 4.9)
Decline in ambulation‡			
3 mo§	73 (57.0)	72 (61.0)	–4.0 (–16.3 to 8.3)
6 mo	59 (47.6)	56 (47.9)	–0.3 (–12.9 to 12.3)
Decline in transfers‡			
3 mo§	57 (44.5)	48 (40.7)	3.9 (–8.5 to 16.2)
6 mo	45 (36.3)	44 (37.6)	–1.3 (–13.5 to 10.9)
Change in residence‡			
3 mo	31 (23.7)	32 (25.4)	–1.7 (–12.3 to 8.8)
6 mo	22 (17.7)	23 (19.7)	–2.0 (–11.8 to 7.9)

Note: CI = confidence interval.
*Absolute difference between percentages for each group.
†Determined on the basis of the entire sample of 141 patients receiving interdisciplinary care and 138 patients receiving usual care.
‡Determined on the basis of surviving patients only: 131 patients receiving interdisciplinary care and 126 receiving usual care at 3 months, and 124 patients receiving interdisciplinary care and 117 receiving usual care at 6 months (see also additional note concerning missing data at 3 months for some variables).
§Data were missing for 3 patients receiving interdisciplinary care and 8 patients receiving usual care.

evaluated interventions similar to ours and measured outcomes beyond the time of discharge from the acute care hospital.[10–12,14,16] Two of these studies found clinical benefits, but one had a heterogeneous patient population, of whom only 18% had hip fracture,[11] and the other had unequal treatment groups at baseline, which introduced bias in favour of the intervention group.[10,19] One negative trial had a very small sample (75 patients),[12] and another negative trial included less than a third of the initial sample in its 1-year follow-up.[16] The most methodologically rigorous study had 252 patients and demonstrated modest clinical benefits at the time of hospital discharge, but no significant clinical benefits at 4 months.[14]

We do not believe that contamination bias explains our study results. First, the clinical outcomes in the control group were identical with those estimated in the a priori sample size calculation and were very similar to those described in prognostic studies.[3–5] Second, patients in the intervention group consistently received significantly more care from allied health care professionals throughout the study period (Table 2). Third, during the entire study only 11 geriatric consultations were requested for control patients.

Inadequate targeting of patients with hip fracture may explain our negative results. Effective interdisciplinary geriatric interventions must target a specific population that is neither too well nor too unwell to derive benefit.[33,34] Our sample included a relatively heterogeneous population of patients from the community and from nursing homes. The subgroup analysis (based on cognitive status) showed a trend for benefit of interdisciplinary care in patients with mild to moderate cognitive impairment. This finding is consistent with that of another recent randomized trial of care after surgery for hip fracture on a geriatric ward, which showed that only the subgroups with mild and moderate dementia derived benefit.[35]

Perhaps the intervention in our study was inadequate to be of benefit to a majority of elderly patients with hip fracture. A meta-analysis of models of interdisciplinary geriatric care suggests that programs with extended ambulatory follow-up care are more likely to be effective.[34] Given the burden of disease in elderly patients with hip fracture, the lack of specialized follow-up care may have negated any potential long-term benefits derived from the intense intervention during the initial hospital stay.

In conclusion, we did not observe any significant long-term benefits of inpatient interdisciplinary geriatric care for a heterogeneous group of elderly patients with hip fracture, but the statistical power of our study was limited. A subgroup analysis suggested a trend toward benefit in patients with mild to moderate cognitive impairment. Future research should focus on improving our understanding of prognostic factors for successful rehabilitation in elderly patients with hip fracture, so that we can target the subgroups most likely to benefit. In addition, studies should evaluate whether combined inpatient and follow-up intervention programs can improve long-term clinical outcomes.

Table 4: Odds ratios (ORs) for being alive and having no decline in ambulation, transfers or residential status at 6 months for variables entered into the multiple logistic regression model*

Variable	Unadjusted OR (and 95% CI)	Adjusted OR† (and 95% CI)
Treatment group (intervention v. control)	1.2 (0.8–2.0)	1.1 (0.6–2.1)
Age (per 5-yr increase in age)	0.6 (0.5–0.8)	0.6 (0.5–0.8)
Sex (female v. male)	1.3 (0.7–2.4)	1.1 (0.5–2.4)
Comorbidity (per increasing no. of comorbid conditions)	0.8 (0.7–1.0)	0.8 (0.7–1.0)
Walking aid (yes v. no)	0.8 (0.5–1.3)	1.0 (0.6–1.9)
Functional and cognitive scores		
Total Barthel Index score (> 60 v. ≤ 60)	5.8 (2.2–20.2)	1.6 (0.4–5.9)
SMSQ score (3–6 v. 0–2)	3.8 (1.8–8.7)	2.5 (1.0–6.3)
SMSQ score (7–10 v. 0–2)	11.6 (5.7–25.6)	6.3 (2.4–16.5)
Baseline residence		
Relative's home or retirement home v. own home	0.7 (0.4–1.3)	1.6 (0.8–3.3)
Nursing home v. own home	0.1 (0.1–0.3)	0.6 (0.2–1.5)
Type of surgery		
Pin and plate v. hemi-arthroplasty	1.1 (0.6–1.9)	1.1 (0.6–2.1)
Other v. hemi-arthroplasty	1.4 (0.6–3.5)	0.7 (0.2–2.0)

*An OR greater than 1 indicates a greater chance of being alive and having no decline in ambulation, transfers or residential status. An OR less than 1 indicates a lesser chance of being alive and having no decline in ambulation, transfers or residential status.
†The OR for each variable is adjusted for all other variables listed in the table.

Table 5: Place of residence and mortality rate at time of discharge from hospital and at 6-month follow-up in relation to residence at time of admission

	Place of residence at discharge or mortality rate; no. (and %) of patients				
Place of residence on admission*	Own home	Relative's or retirement home	Nursing home	Other†	Died‡
Own home					
At discharge§					
Interdisciplinary (*n* = 64)	19 (30)	6 (9)	3 (5)	34 (53)	2 (3)
Usual care (*n* = 63)	8 (13)	1 (2)	5 (8)	45 (71)	4 (6)
At 6 months¶					
Interdisciplinary (*n* = 64)	44 (69)	5 (8)	5 (8)	6 (9)	4 (6)
Usual care (*n* = 63)	43 (68)	7 (11)	5 (8)	3 (5)	5 (8)
Relative's home or retirement home					
*At discharge***					
Interdisciplinary (*n* = 39)	2 (5)	13 (33)	1 (3)	20 (51)	3 (8)
Usual care (*n* = 34)	2 (6)	5 (15)	8 (24)	14 (41)	5 (15)
At 6 months††					
Interdisciplinary (*n* = 39)	1 (3)	27 (69)	2 (5)	4 (10)‡‡	5 (13)
Usual care (*n* = 34)	0	19 (56)	8 (24)	0	7 (21)
Nursing home					
At discharge§§					
Interdisciplinary (*n* = 38)	0	0	34 (89)	2 (5)	2 (5)
Usual care (*n* = 41)	0	1 (2)	35 (85)	1 (2)	4 (10)
At 6 months¶ ¶					
Interdisciplinary (*n* = 38)	0	0	30 (79)	0	8 (21)
Usual care (*n* = 41)	0	1 (2)	29 (71)	2 (5)	9 (22)

*n values represent the number of patients at baseline.
†Rehabilitation hospital or acute care hospital (the latter at 6 months only).
‡Deaths "at discharge" represent patients who died during the initial hospital stay for treatment of hip fracture.
§For survivors, there was a significant difference between treatment groups in the distribution of discharge destinations ($p = 0.02$).
¶For survivors, there was no significant difference between treatment groups in the distribution of residences at 6-month follow-up ($p = 0.77$).
**For survivors, there was a significant difference between treatment groups in the distribution of discharge destinations ($p = 0.02$).
††For survivors, there was a significant difference between treatment groups in the distribution of residences at 6-month follow-up ($p = 0.01$). However, when the "other" category was combined with the nursing home category, the differences between groups was no longer significant ($p = 0.36$).
‡‡Three of these patients were in inpatient rehabilitation facilities: 2 from the time of initial hospital discharge (total length of stay in rehabilitation facility at 6-month follow-up was 157 and 163 days respectively) and 1 after a second admission to hospital for a fractured femur (total length of stay in rehabilitation facility 27 days). At 6-month follow-up, the fourth patient was in an acute care hospital for treatment of pneumonia and small-bowel obstruction (for a total stay of 3 days) after having been home for 127 days.
§§For survivors, there was no significant difference between treatment groups in the distribution of discharge destinations ($p = 1.00$).
¶ ¶For survivors, there was no significant difference between treatment groups in the distribution of residences at 6-month follow-up ($p = 0.49$).

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