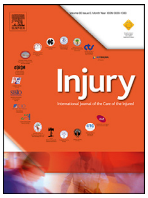
Injury 50 (2019) 2259–2262

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury



Caregivers of hip fracture patients: The forgotten victims?

Joshua A. Parry[a,*], Joshua R. Langford[b], Kenneth J. Koval[c]

[a] *Denver Health, University of Colorado School of Medicine, 777 Bannock St, MC 0188, Denver, CO, United States*
[b] *Orlando Health, Orlando, FL, United States*
[c] *Memorial Hospital, Gulfport, MS, United States*

ARTICLE INFO

Article history:
Accepted 20 September 2019

Keywords:
Hip Fractures
Intertrochanteric femur fracture
Caregiver
Caregiving
Burden
Long-term care facility

ABSTRACT

Introduction: The burden that family and friends assume when caring for hip fracture patients can negatively impact the caregiver's quality of life, relationships, and the decision to place the patient in a care facility. The purpose of this study was to evaluate the burden of caregiving for intertrochanteric hip fractures to better counsel patients and caregivers in order to prevent delayed admission to a care facility.
Methods: A retrospective analysis of a prospectively gathered elderly hip fracture database identified 29 patients and their caregivers with complete 6 month follow-up. Caregiver burden and depression scales were administered to the primary caregiver in the immediate perioperative period (baseline), at 3 month follow-up, and at 6 month follow-up. At each time point caregivers reported the effects of caregiving on their finances, work hours, relationships, and their willingness to admit the patient to a long-term care facility.
Results: At 6 month follow-up, <30% of caregivers reported negative effects on their finances, relationships, work hours, or intent to place the patient in care facility, while 77% endorsed cherishing their time spent as a caregiver. The number of caregivers with a high caregiver burden remained stable at 20% over the 6 month follow-up; these caregivers were more likely to have a depressed mood ($p < 0.01$), to consider placement of the patient into a long-term care facility ($p < 0.01$), and to have negatively affected finances ($p = 0.03$) and relationships ($p < 0.01$).
Conclusions: High degrees of burden were experienced by 20% of caregivers of hip fracture patients. Caregivers with high caregiver burdens were more likely to consider placement of the patient into a long-term care facility. Risk factors for high caregiver burdens should be identified to optimize the quality of caregiving after discharge and to prevent delayed admission to a long-term care facility.
Level of Evidence: Level IV, case series.

Introduction

The burden that family and friends assume when caring for hip fracture patients can negatively impact the caregiver's quality of life, relationships, and the decision to place the patient in a care facility [1–4]. Identifying caregivers that will be overly burdened by their caregiving roles would be beneficial in improving the quality of caregiving and preventing admission of hip fracture patients to a long-term care facility.

The purpose of this study was to analyze survey information collected from the primary caregivers of hip fracture patients to evaluate the burden of caregiving and to identify factors that may be associated with greater degrees of burden. This data could be useful in counseling hip fracture caregivers and preventing an overly burdensome caregiving experience.

Materials and methods

After approval by the institutional review board a retrospective analysis of a prospectively gathered hip fracture data was performed. Patients were excluded if they were less than 65 years of age, discharged to a rehab or long-term care facility, or had incomplete follow-up, leaving 29 patients their caregivers. All patients sustained an intertrochanteric femur fracture and were fixed with a cepalomedullary nail. Average age was 83 years (range, 66 to 100 years) and 22 (76%) were female. Four (14%) lived alone and 25 (86%) lived with someone. All patients were ambulating unassisted prior to the fracture. The American Society of Anesthesiologist Physical Classification Score (ASA score) included ASA II for 6 (21%), ASA III for 17 (61%) and ASA 4 for 5 (18%). Caretakers were

---

[*] Corresponding author.
E-mail address: joshua.parry@dhha.org (J.A. Parry).

https://doi.org/10.1016/j.injury.2019.09.030

Table 1
Caregiver Burden Scale.

	Strongly disagree (1)	Disagree (2)	Disagree a little (3)	Agree a little (4)	Agree (5)	Agree strongly (6)
a. The things I am responsible for do not fit well with what I want to do						
b. I am not always able to be the person I want to be when I am with my care receiver						
c. It is difficult for me to accept all the responsibility for my care receiver						
d. I am having trouble accepting the way I relate to my care receiver						
e. I am not sure that I can accept any more responsibility than I have right now						
f. It is difficult for me to accept the responsibilities that I now have to assume						
My caregiving responsibilities have:	Not at all (1)	A little (2)	Moderately (3)	A lot (4)	A great deal (5)	
a. Caused conflicts with my care receiver						
b. Decreased time I have to myself						
c. Created a feeling of hopelessness						
e. Increased the number of unreasonable requests made by my care receiver						
f. Kept me from recreational activities						
g. Made me nervous						
i. Caused me to feel that my care receiver makes demands over and above what he/she needs						
j. Caused my social life to suffer						
k. Depressed me						
m. Made me feel I was being taken advantage of by my care receiver						
n. Changed my routine						
o. Made me anxious						
q. Increased attempts by my care receiver to manipulate me						
r. Given me little time for friends and relatives						
s. Caused me to worry						
u. Left me with almost no time to relax						
	A great deal (1)	A lot (2)	Moderately (3)	A little (4)	Not at all (5)	
d. Given my life more meaning						
h. Made me more satisfied with my relationship with the care receiver						
l. Given me a sense of fulfillment						
p. Left me feeling good						
t. Made me enjoy being with my care receiver more						
v. Made me cherish my time with my care receiver						

Table 2
The Center for Epidemiologic Studies Depression Scale Revised (CESD-R-10).

During the past week...	Rarely or none of the time (less than 1 day) (0 points)	Some or a little of the time (1–2 days) (1 point)	Occasionally or a moderate amount of time (3–4 days) (2 points)	All of the time (5–7 days) (3 points)
a. I was bothered by things that usually don't bother me				
b. I had trouble keeping my mind on what I was doing				
c. I felt depressed				
d. I felt that everything I did was an effort				
e. I felt hopeful about the future				
f. I felt fearful				
g. My sleep was restless				
h. I was happy				
i. I felt lonely				
j. I could not "get going"				

adult children (14, 48%), spouses (11, 38%), or extended family or guardians (4, 14%).

Caregiver burden and depression scales were administered to the primary caregiver in the immediate perioperative period (baseline), at 3 month follow-up, and at 6 month follow-up. The caregiver burden scale consisted of 28 questions and was scored from 28 to 158 points, with higher scores representing a higher burden (Table 1) [5]. A high caregiver burden scale score was considered to be one standard deviation over the mean (≥65 points). The Center for Epidemiologic Studies Depression Scale Revised (CESD-R-10) consisted of 10 questions and was scored from 0 to 30 points, with a score of 10 or more being consistent with a depressed mood (Table 2) [6]. At each time point caregivers completed a survey on the effects of caregiving on their finances, work hours, relationships, and their willingness to admit the patient to a long-term care facility.

The Chi square test and Fisher exact test were used to evaluate differences between categorical variables. All analyses were carried out using statistical software. A p-value less than 0.05 was considered statistically significant.

Results

Survey results at 6 month follow-up showed that all patients remained ambulatory without assistance. Of the 29 caretakers, Five (17%) reported decreased work hours, 7 (24%) reported affected

Table 3
Survey data at baseline, 3 month, and 6 month follow-up.

	Baseline	3 months	6 months	P-value
Married	26 (65%)	23 (57%)	22 (55%)	0.9
Employed	15 (37%)	17 (42%)	17 (42%)	0.8
Cognitive issues or dementia	14 (35%)	18 (45%)	19 (48%)	0.9
High Depression scale ($\geq$10 points)	7 (17%)	7 (17%)	9 (22%)	0.6
High Caregiver Burden Scale ($\geq$65 points)	8 (20%)	11 (27%)	8 (20%)	0.6
Finances affected		10 (25%)	12 (30%)	0.6
Marriage/Relationship affected		5 (12%)	4 (10%)	0.8
Affected work hours		9 (22%)	8 (20%)	0.7
Cherished there time with care-receiver		27 (67%)	31 (77%)	0.13
Considering placement	1 (2%)	2 (5%)	3 (7%)	0.3
Patient admitted to long-term care facility		1	2	

Table 4
Factors associated with a high versus low caregiver burden.

	Baseline	3 months	6 months
Married	50% vs 68%, $p = 0.4$	63% vs 65%, $p = 0.6$	50% vs 56%, $p = 0.4$
Employed	62% vs 31%, $p = 0.1$	45% vs 41%, $p = 0.8$	50% vs 40%, $p = 0.7$
Cognitive issues or dementia	50% vs 31%, $p = 0.4$	27% vs 37%, $p = 0.7$	62% vs 44%, $p = 0.4$
High Depression scale (>10 points)	37% vs 12%, $p = 0.1$	**54% vs 3%, $p < 0.01$**	**62% vs 12%, $p < 0.01$**
Considering placement	0% vs 3%, $p = 0.4$	**18% vs 0%, $p < 0.01$**	**28% vs 0%, $p < 0.01$**
Finances affected		36% vs 17%, $p = 0.4$	**62% vs 22%, $p = 0.03$**
Marriage/Relationship affected		**36% vs 3%, $p = 0.01$**	**37% vs 3%, $p < 0.01$**
Affected work hours		36% vs 17%, $p = 0.4$	50% vs 12%, $p = 0.06$
Cherished there time with caregiver		**27% vs 82%, $p < 0.01$**	63% vs 81%, $p = 0.1$

Bold results are considered statistically significant with a *p*-value less than 0.05.

finances, and 3 (10%) reported affected relationships. Twenty (67%) caregivers endorsed cherishing their time as a caregiver a lot or a great deal. By the 6 month follow-up four care-recipients (7%) had been admitted to a long-term care facility. The four caregivers that admitted their care-recipients to a long-term care facility during the study period did not have a high baseline caregiver burden scale or depression scale (Table 3).

Eight (20%) caregivers reported a high caregiver burden ($\geq$65 points) at the baseline evaluation and this remained unchanged at the 6 month follow-up. The prevalence of a depressed mood (depression scale $\geq$10 points) among the caregivers was also similar between baseline and 6 month evaluations, 7 (17%) and 9 (22%), respectively ($p = 0.6$). Factors associated with a high caregiver burden are presented in Table 4. At the 6 month follow-up, caregivers who had a high caregiver burden were more likely to report a depressed mood ($p < 0.01$), were more likely to consider placement of the patient into a long-term care facility ($p < 0.01$), and were more likely to have negatively affected finances ($p = 0.03$) and relationships ($p < 0.01$). None of these characteristics at baseline were predictive of a high caregiver burden at final follow-up.

Discussion and conclusions

At 6 months after hip fracture, a majority of caregivers regarded their role as a caregiver positively and denied negatively affected work hours, finances, or relationships. However, 20% of caregivers reported high caregiver burden scores and this remained consistent over the 6 month follow-up. Caregivers with increased burden scores were more likely to report a depressed mood. High burden and depression scores at the baseline screening were not predictive of high scores at follow-up, suggesting these factors have limited predictive value in identifying at-risk caregivers. A depressed mood, affected finances, and affected relationships were all associated with high caregiver burden at six month follow-up. This may be useful information for advising caregivers with at-risk mental health, finances, and relationships.

Similar to our findings that most caregivers were happy with their experience, Nahm et al. [1]. reported that despite a burdensome initial phase of care consisting of hospital bills and transitions of care, becoming a caregiver was viewed positively as an opportunity to spend more time with love ones.

The caregiver role can negatively impact the caregiver's general health and mental health [3,4]. This is an important to patients because the overburdened caregiver has also been shown to negatively impact the patient's overall recovery [4]. Factors that have been previously shown to increase the caregiver burden after hip fracture include the patient's difficulty with activities of daily living and cognitive deficits [2]. Our study did not find a link between reported dementia and cognitive difficulties in hip fracture patients and the caregiver burden scale or depression scale, however with our data we were not able to differentiate the severity of cognitive deficits. The incidence of severe cognitive deficits may have been low in this cohort and therefore had less of an impact of caregiver burden.

A non-trivial number of caregivers (20%) reported an overly burdensome caregiver role. Subsequently, these caregivers were more likely to consider placing the patient in a long-term care facility. Identifying and intervening with this at-risk group of caregivers may benefit the caregiver, the patient, and the quality of caregiving [4]. A study of 266 caregivers undergoing assessment by care managers demonstrated that caregivers with a high caregiver burden scale were more likely to have a depressed mood and an intention to place the care-recipient in a long-term care facility placement [5]. Caregivers with a high caregiver burden scale that underwent care manager intervention had improvements in their overall well-being and mental health outcomes. Based on these results, surgeons may consider screening for overburdened caregivers and making referrals to care managers when appropriate.

This study was limited by its small retrospective nature and its dependence on survey data, which only provides a crude picture of the overall social situation. This data was based on patients who were discharged home therefore caution is necessary when applying this information to caregivers of patients who require acute or chronic care facility placement. Also, due to the retrospective nature, we have little ability to evaluate and determine risk factors for the three caregivers who admitted their hip fracture patient to a long-term care facility during the study. None of these caregivers reported a high caregiver burden or depressed mood at baseline so these factors do not appear to be predictive of delayed admission to a long-term care facility.

The strengths of this study include complete survey information at baseline, 3 months, and 6 months for 40 caregivers of hip fracture patients treated at a level one trauma center. This data allowed us to assess the degree of burden and depression among caregivers for hip fracture patients and these results should be generalizable to similar populations.

The results of this study suggest that of hip fracture patients discharged home with loved ones acting as the caregiver is overall a positive experience for the caregiver with few patients being admitted to a long-term care facility during the follow-up period. Few caregivers reported negative effects on relationships, work, or finances. This information is useful for patient and caregiver counseling when considering discharge home. However, 20% of caregivers had high degrees of burden, therefore further research is needed identify patient and caregiver factors that result in overly burdensome caregiving experience to optimize the quality of caregiving after discharge and prevent delayed admission to a long-term care facility.

Source of funding

None.

Declaration of Competing Interest

Kenneth Koval is a board or committee member of the Academy of American Orthopaedic Surgeons and the Orthopaedic Trauma Association; is on the editorial board of the Journal of Orthopaedics and Traumatology; is a paid speaker or consultant for Biomet and Stryker; receives publishing royalties from Wolters Kluwer Health. Joshua Langford is on the editorial board of the Journal of Orthopaedic Trauma; receives royalties from Advanced Orthopaedic Solutions; has stock options with Core Orthopaedics; and is a paid consultant for Orthogrid and Stryker. Joshua Parry has nothing to declare.

References

[1] Nahm E-S, Resnick B, Orwig D, Magaziner J, Degrezia M. Exploration of informal caregiving following hip fracture. Geriatr Nurs 2010;31:254–62. doi:10.1016/j.gerinurse.2010.01.003.

[2] Diameta E, Adandom I, Jumbo SU, Nwankwo HC, Obi PC, Kalu ME. The burden experience of formal and informal caregivers of older adults with hip fracture in Nigeria. SAGE Open Nurs 2018;4:237796081878515. doi:10.1177/2377960818785155.

[3] Shyu Y-IL, Chen M-C, Liang J, Tseng M-Y. Trends in health outcomes for family caregivers of hip-fractured elders during the first 12 months after discharge. J Adv Nurs 2012;68:658–66. doi:10.1111/j.1365-2648.2011.05778.x.

[4] Shyu Y-IL, Chen M-C, Wu C-C, Cheng H-S. Family caregivers' needs predict functional recovery of older care recipients after hip fracture. J Adv Nurs 2010;66:2450–9. doi:10.1111/j.1365-2648.2010.05418.x.

[5] Montgomery RJV, Kwak J, Kosloski K, O'Connell Valuch K. Effects of the TCARE(R) intervention on caregiver burden and depressive symptoms: preliminary findings from a randomized controlled study. J Gerontol Ser B Psychol Sci Soc Sci 2011;66B:640–7. doi:10.1093/geronb/gbr088.

[6] Radloff LS. The CES-D Scale. Appl Psychol Meas 1977;1:385–401. doi:10.1177/014662167700100306.