

RACIAL DIFFERENCES IN INSTITUTIONALIZATION AFTER HIP FRACTURES: CALIFORNIA HOSPITAL DISCHARGE DATA

Objective: Hip fractures related to osteoporosis are a major cause of illness leading to institutionalization of elderly patients. Our objective was to determine the ethnic differences and the factors influencing the placement of hip fracture patients in extended-care facilities (ECFs).

Design: Secondary data analyses of California Hospital Discharge Data Program (CHDDP).

Participants: 78,576 men and 246,177 women ≥ 65 years of age with hip fractures related to osteoporosis were included for the analyses.

Methods: The main outcome variable was placement in ECFs as opposed to home. Other variables studied were age, gender, ethnicity, comorbid conditions, insurance, and length of stay in the hospital.

Results: Whites and African-American patients with hip fractures were more likely to be placed in ECFs compared to Hispanics. Older age, male gender, presence of two or more comorbid conditions, Medicare insurance, and shorter length of stay in the hospital were also significantly associated with placement in ECFs.

Conclusion: Future studies should explore sociocultural and other factors that influence ethnic differences in the disposition of hip fracture patients. (*Ethn Dis.* 2005;15 [suppl 5]:S5-30-S5-33)

Key Words: Racial Differences, Hip Fracture, Extended Care Facilities

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INTRODUCTION

Hip fractures are a major cause of death and loss of function among the elderly. In the United States, 16% of women will suffer a hip fracture when they are ≥ 65 years of age.^{1,2} The annual incidence of hip fractures in the United States is $\approx 350,000$ cases, accounting for several millions of dollars in hospital costs.³ Incidence is projected to double by 2040 as the population ages.¹ Other expenses include nursing home, home health rehabilitation, and outpatient visits. Approximately 24% die within 12 months after the fracture.⁴ Thirty-nine percent of hip fracture patients enter an institution, and only 17% walk independently at 6 months.^{5,6}

Several studies have shown ethnic disparities in the medical care in the United States.⁷⁻¹⁰ Ethnic minorities in general receive less screening and therapeutic interventions than Whites.⁷⁻¹⁰ Though Whites are more likely to have osteoporosis and osteoporosis-related fractures, other ethnic groups are also affected.¹¹⁻¹⁴

A study done by Proctor et al reported that African Americans are discharged from the hospital more sick, more dependent, and more cognitively impaired.¹⁵ Morrow-Howell et al reported that, during discharge planning, African-American patients and family members were less likely to pursue nursing home care.¹⁶ This finding could be due to social, cultural, and other factors. We could not find any studies examining ethnic differences in the disposition of hip fracture patients in our literature search. Therefore, we undertook this study to examine whether ethnic differences influence the disposition of hip fracture patients. We hypothesized that elderly minority pa-

tients were more likely to be discharged home after hip fractures than Whites.

METHODS

Data from the California Hospital Discharge Data Program (CHDDP) between 1990 and 2000 were analyzed for this study. The CHDDP maintains records of most hospital inpatient discharges from acute care hospitals.¹⁷ The diagnosis of hip fracture was identified by the International Classification of Diseases, Adapted, Ninth Revision (ICDA-9) code. Subjects aged ≥ 65 years with hip fractures were included for the analyses. Traumatic and pathologic fractures were excluded to examine the fractures related to osteoporosis only. Disposition was collapsed into 2 groups, 1) home and home health versus 2) other facilities.

Age group was categorized into three groups: 1) 65-74 years; 2) 75-84 years; and 3) ≥ 85 years. Ethnicity was categorized into four groups: 1) Whites; 2) African Americans; 3) Hispanics; and 4) Asians and others. Insurance coverage was categorized into two groups: 1) Medicare; and 2) others. Length of stay in the hospital was categorized into two groups: 1) less than seven days; and 2) seven or more days. Number of medical conditions was collapsed into two groups: 1) less than two; and 2) two or more.

Categorical variables were analyzed by using chi-square test. Logistic regression analyses were conducted between likelihood of disposition to home or home health and race/ethnicity after controlling for confounding variables such as age, gender, insurance status, length of stay, and number of comorbid

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conditions.¹⁸ Univariate analyses of all predictor variables were assessed before regression analyses.

RESULTS

We assessed 324,760 subjects aged ≥ 65 years with hip fractures related to osteoporosis. Whites made up 87% (281,928) of patients, and 76% were female. A total of 88% had more than two medical conditions, and 86% had Medicare health insurance. A total of 49% stayed in the hospital for seven or more days. Study population characteristics are given in Table 1.

Bivariate analyses showed that 78% of participants ≥ 85 years were discharged to extended-care facilities (ECFs), whereas in the 65- to 74-year age group only 58.7% were sent to ECFs. The rates for ECF placement in men and women were equal (71%). Compared to Whites (72%), other ethnic groups had lower rates of ECF placement; Hispanics were the lowest (64%). The number of comorbid conditions (two or more) and having Medicare insurance were also associated with placement in ECFs. Longer length of stay in the hospital was associated with disposition to home than ECFs (40% vs 18%). Table 2 shows the results of bivariate analyses.

In the logistic regression analyses, Hispanics (odds ratio [OR] .74, 95% confidence interval [CI] .71–.76) and Asians/Others were more likely to be discharged home. Older age and presence of two or more medical conditions (OR 1.7, 95% CI 1.66–1.74) were associated with placement in other facilities. Men were more likely to be placed in ECFs when compared to men (OR .96, 95% CI .94–.97). The presence of Medicare insurance (OR 1.24, 95% CI 1.21–1.27) and shorter length of stay (OR 3.39, 95% CI 3.33–3.45) were also significantly associated with placement in ECFs. Table 3 shows the logistic regression analyses.

Table 1. Study population characteristics

Characteristic	N (%)
Age (y)	
65–74	57,703 (18)
75–84	138,883 (43)
≥ 85	128,174 (39)
Gender	
Male	78,576 (24)
Female	246,177 (76)
Race	
White	281,928 (87)
Black	8016 (2)
Hispanic	19,003 (6)
Asian and Other	15,711 (5)
Comorbid conditions	
< 2	38,339 (12)
≥ 2	286,421 (88)
Insurance	
Medicare	279,419 (86)
Other	45,283 (14)
Length of stay (d)	
0–6	162,189 (51)
≥ 7	161,697 (49)
Disposition	
Home/home health	90,304 (29)
Other facility	223,132 (71)

DISCUSSION

Our results supported the hypothesis that Hispanic elderly patients with hip fractures were more likely to be dis-

charged home compared to Whites, after controlling for selected other variables. However, African Americans were not likely to be discharged home as we predicted. Other factors such as age, gender, insurance, length of stay, and number of comorbid conditions were independently associated with placement to ECFs.

Studies that examine factors influencing ECF placement are few. Cree et al. studied 610 patients to identify the determinants of death and institutionalization after hip fracture.¹⁹ Cognitive status, age, and postfracture functional status influenced institutionalization in this population-based sample. Further, socioeconomic factors such as social support and health perception were not significantly associated with institutionalization in this study. Our study also found age to be significantly associated with placement to ECF. Another group of investigators found age was not significantly related to ECF placement.²⁰ Poor physical function before and after the fracture did influence ECF placement in other studies.^{19,20} Gender was independently associated with placement to ECFs in our

Table 2. Bivariate analyses

Variable	Home, N (%)	Other Facility, N (%)	P value
Age Group (y)			
65–74	23,215 (41.3)	32,999 (58.7)	$< .0001$
75–84	40,321 (29.9)	94,350 (70.1)	
≥ 85	26,768 (21.8)	95,783 (78.2)	
Gender			
Male	21,825 (29.3)	52,548 (70.7)	$< .01$
Female	68,476 (28.6)	170,580 (71.4)	
Ethnicity			
White	76,181 (28.0)	195,871 (72.0)	$< .0001$
Black	2388 (30.8)	5374 (69.2)	
Hispanic	6595 (35.9)	11,785 (64.1)	
Asian/Others	5109 (33.7)	10,035 (66.3)	
Comorbidity			
< 2	13,512 (35.6)	24,459 (64.4)	$< .0001$
≥ 2	76,792 (27.9)	198,673 (72.1)	
Insurance			
Medicare	75,877 (28.0)	193,992 (72.0)	$< .0001$
Other	14,408 (33.0)	29,105 (67.0)	
Length of stay (d)			
0–6	27,911 (17.8)	129,197 (82.2)	$< .0001$
≥ 7	62,289 (40.0)	93,377 (60.0)	

Table 3. Multivariate analyses of variables influencing placement in extended-care facilities

Variable	Odds Ratio	95% Confidence Interval
Age (y)		
65-74	Reference	
75-84	1.69	1.66-1.73
≥85	2.58	2.59-2.71
Gender		
Male	Reference	
Female	0.96	.94-.97
Ethnicity		
White	Reference	
Black	0.97	.92-1.02
Hispanic	0.74	.71-.76
Asian/Other	0.82	.79-.85
Comorbid conditions		
<2	Reference	
≥2	1.70	1.66-1.74
Insurance		
Other	Reference	
Medicare	1.24	1.21-1.27
Length of stay (d)		
≥7	Reference	
0-6	3.39	3.33-3.45

study. Cree et al. did not find gender differences in institutionalization after hip fractures.¹⁹

Our study also found that the number of comorbid conditions significantly influenced ECF placement whereas Cree et al. did not find this to be a significant factor.¹⁹ As expected, having Medicare insurance was independently associated with ECF placement in our study. This finding could be related to higher reimbursement from Medicare insurance compared to other types of insurance. Shorter length of hospital stay was associated with ECF placement in our study. Patients whose hospital stays were shorter were more likely to be sent to ECFs for further management such as rehabilitation, whereas patients whose hospital stays were longer could have received additional therapies before being discharged home or with home health.

This is a large sample of elderly patients, including a number of African Americans and Hispanics, and may therefore be applicable to other populations in other states. We could not be sure that the patients included for the

analyses all had hip fractures related to osteoporosis, although we excluded patients with traumatic and pathologic fractures. Since most hip fractures are related to osteoporosis in the elderly, the assumption that almost all the fractures were related to osteoporosis is safe to make. Some private hospitals and health maintenance organizations do not participate in the CHDDP, so not all California hospitals are included in this analysis. The patients who were transferred to other hospitals for acute care would have been categorized as going to ECFs. Lastly, we could not examine other variables, such as functional and cognitive status, since the data were not available.

In conclusion, Hispanic elderly patients with hip fractures were more likely to be discharged home compared to African Americans and Whites even after controlling for other factors such as age, insurance, comorbid conditions, and length of stay in the hospital. Further prospective studies are warranted to explore the possible social and cultural factors influencing ethnic differences in the disposition of patients with hip fractures.

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