Published in final edited form as:

Am J Phys Med Rehabil. 2008 July ; 87(7): 567–572. doi:10.1097/PHM.0b013e31817c143a.

Gender and Ethnic Differences in Rehabilitation Outcomes Following Hip Replacement Surgery

Ivonne-Marie Bergés, Ph.D.³, Yong-Fang Kuo, Ph.D.¹, Glenn V. Ostir, Ph.D.^{1,2,3}, Carl V. Granger, M.D.⁴, James E. Graham, Ph.D.³, and Kenneth J. Ottenbacher, Ph.D., OTR^{1,3}

¹ Sealy Center on Aging, University of Texas Medical Branch at Galveston

² Division of Geriatrics, Department of Medicine, University of Texas Medical Branch at Galveston

³ Division of Rehabilitation Sciences, University of Texas Medical Branch

⁴ Uniform Data System for Medical Rehabilitation, Department of Rehabilitation Medicine, State University of New York at Buffalo

Abstract

Objective—To examine gender and ethnic differences in functional status and living setting for patients following hip arthroplasty.

Design—Retrospective cohort study of 69,793 patients receiving inpatient medical rehabilitation following hip arthroplasty included in the Uniform Data System for Medical Rehabilitation (UDSMR) database for the period of 2002 to 2003. Primary measures included functional status assessed by the FIMTM instrument and discharge living setting (home versus not home). The sample included non-Hispanic white, non-Hispanic black, Hispanic, and Asian patients.

Results—Multivariate regression models showed the greatest FIMTM instrument change scores from admission to discharge among non-Hispanic whites (mean [SE]: 23.42 [0.18]) and among women (mean [SE]: 22.79 [0.23]). Asians had the lowest mean change scores (mean [SE]: 22.00 [0.53]). Estimates from multivariate logistic models showed black and ethnicity was associated with higher odds of home discharge (black: OR [CI]: 1.23, CI_{95%} = 1.07, 1.41; Hispanic: OR [CI]: 1.51, CI_{95%} = 1.15 – 1.99). Compared to women, men had higher odds of home discharge (OR [CI]: 1.08, CI_{95%} = 1.01, 1.17)

Conclusion—The findings suggest ethnic and gender disparities exist in post-acute care outcomes for persons with hip arthroplasty.

Keywords

Hip; Rehabilitation; Arthroplasty; Ethnicity; Gender

There is considerable clinical and biomedical information on the surgical and acute care management of persons who require total hip arthroplasty.¹ In contrast, much less is known about this group post-operatively. In a recent review of the literature, Brander and Stulberg² indicate the importance of post-operative medical rehabilitation following total hip arthroplasty.³ Prospective studies indicate the benefit and cost-effectiveness of postoperative home or inpatient rehabilitation on functional improvement and the increased likelihood of

home discharge.³ An important question not addressed by previous research is whether functional improvement and home discharge differ by gender or ethnicity.

Since there are gender and ethnic differences in surgical rates and acute care outcomes, it is reasonable to believe there may be gender and ethnic differences in post-acute care outcomes following total hip arthroplasty.^{4,5} The Institute of Medicine and the American Academy of Orthopedic Surgeons indicate the importance of better understanding the role of gender and ethnicity in orthopedic treatments and rehabilitation outcomes.⁶

The purpose of our study is to examine possible gender and ethnic differences in functional status for patients following discharge from inpatient medical rehabilitation for total hip arthroplasty. We hypothesized that the rate of functional improvement after inpatient medical rehabilitation would be greatest for non-Hispanic white patients compared to non-Hispanic blacks, Hispanics, and Asians and that men would have greater functional gains than women. Based on access to health care and other resources, we also hypothesized that discharge setting (home versus not home) will vary across ethnic groups and gender with non-Hispanic whites and men discharge home more frequently. To test our two hypotheses we used a national database with detailed demographic and functional status information on persons who underwent total hip arthroplasty. During the period of the study (2002–2003), total hip arthroplasty patients were the second largest group receiving post-acute medical rehabilitation services in the U.S.⁷

METHODS

Source of Data

Data were from the Uniform Data System for Medical Rehabilitation (UDSMR).⁸ The UDSMR is the largest non-governmental registry of standardized information on medical rehabilitation inpatients in the United States and has been used by rehabilitation facilities since 1987. The information collected includes sociodemographic variables, diagnoses (International Classification of Diseases, Ninth Revision [ICD-9] codes),⁹ functional assessments (admission and discharge), pre-hospital living arrangements and marital status, discharge disposition, length of hospital stay, and residential region. Functional assessment data is obtained from the Functional Independence Measure (FIMTM instrument) included as part of the Inpatient Rehabilitation Facilities-Patient Assessment Instrument (IRF-PAI).¹⁰ Facilities administer the FIM instrument items in the IRF-PAI according to Center for Medicare and Medicaid Service's protocol.¹¹ The items are administered 72 hours after inpatient rehabilitation admission and 72 hours or less before discharge. All FIM instrument items are scored into one of seven levels of function ranging from complete dependence (level 1) to complete independence (level 7).

Study Population

Data was reviewed for 85,225 patients receiving inpatient medical rehabilitation following hip replacement (ICD codes 8.5, 8.51, 8.52) and included in the UDSMR database for the period of 2002 to 2003. We excluded individuals who had missing data on gender or race (N = 1,812); individuals who were not recorded as living at home at time of admission (N = 1,361); individuals who were younger than 50 years of age (5,160); and respondents who were readmissions or transfers from another rehabilitation facility (N = 7,099), resulting in a final sample of 69,793 individuals.

Dependent Variables

Functional Status. Functional status was assessed using the FIM instrument items from the Inpatient Rehabilitation Facilities-Patient Assessment Instrument (IRF-PAI).¹⁰ The FIM

instrument includes two subscales: motor and cognitive. The motor subscale contains 13 items measuring self-care, sphincter control, mobility and locomotion; the cognitive subscale contains 5 items measuring communication and social cognition. The instrument is scored using a seven-level rating where the lowest possible score per item is 1 (most dependent) and the highest possible score is 7 (most independent). The reliability, validity, and responsiveness of the FIM instrument items and subscales have been widely investigated, and consistently produced correlations greater than 0.85.¹² Living Setting. Information on living setting was collected at both admission and discharge from medical rehabilitation. Living setting in the UDSMR database was coded as home, board and intermediate care, skilled nursing facility, hospital, rehabilitation facility, and other. For statistical analyses purposes, these categories were recoded as discharge “to home” and “not home”.

Independent Variable

Ethnicity. The UDSMR database contains information for the following ethnic categories: Non-Hispanic White, non-Hispanic Black, Hispanic/Latino, Asian, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander. Because of small numbers, American Indians, Alaska Natives, Native Hawaiians, and Pacific Islander were not included in the statistical analyses.

Covariates

Demographics. Age (continuous); gender ('0' = men and '1' = women); marital status ('0' = not married and '1' = married); ethnicity ('0' = non-Hispanic white, '1' = non-Hispanic black, '2' = Hispanic, and '3' = Asian); living arrangement ('0' = living with family / relatives / friends / other, '1' = living alone) were included as covariates in the data analysis.

Length of Stay. Length of stay (LOS) was calculated as the total number of days the patient was on the rehabilitation service.

Co-morbidities. In the UDSMR database co-morbidities included cerebrovascular disease, chronic pulmonary disease, congestive heart failure, diabetes, myocardial infarction, or hypertension ('0' = no co-morbidity, '1' = co-morbidity).

Residential Region. The region of the patient's place of residence was coded according to the U.S. Department of Commerce Economics and Statistics Administration U.S. Census Bureau. Census regions are classified as: Region 1, Northeast (coded as '1'); Region 2, Midwest (coded as '2'); Region 3, South (coded as '3'); and Region 4, West (coded as '4').

Statistical Analysis

We examined demographic variables by ethnicity for all patients using univariate statistics for continuous variables and contingency tables (χ^2 test) for categorical variables. To determine the role of ethnicity and gender on functional status, general linear models were fitted adjusting for admission FIM rating, age, marital status, living arrangements, co-morbidities, length of inpatient rehabilitation stay and residential region. Statistical model assumptions for the general linear models including normality, homoscedasticity, and nonlinearity were evaluated and met.

We then used multivariate logistic regression analysis to examine the effect of race/ethnicity and gender on discharge “home” vs. “not home” controlling for age, marital status, discharge FIM rating, co-morbidities and length of stay. All statistical analyses were conducted using SAS version 9.1.¹³

RESULTS

Tables 1 and 2 contain patient characteristics by ethnicity and gender. The mean age (+ standard deviation) for the sample was 71.7 years (+ 9.3); 66.5% were women, 53.0% were married; and mean length of stay was 8.9 (+ 4.1). Most patients were non-Hispanic white (90.4%), followed by non-Hispanic black (7.1%), Hispanic (2.0%) and Asian (0.5%). On average, non-Hispanic blacks were younger, more likely to live alone, and had the longest length of hospital stay. Asians were the least likely to live alone, and had the highest FIM ratings at admission and discharge, whereas Hispanics had the lowest FIM ratings at admission and discharge.

Table 3 presents results of general linear models estimating the relationship between ethnicity, gender, and improvement in FIM ratings from admission to discharge. Non-Hispanic whites had the highest mean FIM change (23.42, SE [0.18]; Asians had the lowest mean FIM change (22.00, SE [0.53]); and women had a higher mean FIM change (22.79, SE [0.23]) than men. All models controlled for admission FIM rating, age, marital status, living arrangements, comorbidities, length of inpatient rehabilitation stay, and residential region.

Table 4 presents results from bivariate analysis and estimates of odds ratios from multivariate logistic analysis of home discharge. Descriptive statistics examining the unadjusted differences between ethnicity and home discharge showed similar patterns across the four ethnic groups. After adjusting for sociodemographic characteristics, comorbidities, length of stay, discharge FIM instrument ratings, and residential region in the multivariate model, non-Hispanic black and Hispanic patients had statistically significant higher odds of home discharge compared to whites. Odds ratios for home discharge were: non-Hispanic black (OR 1.23, 95% CI 1.07, 1.41) and Hispanic (OR 1.51, 95% CI 1.15, 1.99). Asian patients did not reach statistical significance. Male gender (OR 1.08, 95% CI 1.01, 1.17), being married (OR 2.42, 95% CI 2.24, 2.61), and higher discharge FIM ratings (OR 1.10, 95% CI 1.10, 1.11) were all associated with greater odds of home discharge. Older age was also associated with lower odds of home discharge (OR 0.97, 95% CI 0.97, 0.98).

DISCUSSION

This study examined the effects of ethnicity and gender on rehabilitation outcomes following hip replacement surgery in adults 50 years and older. We hypothesized that the rate of functional gains would differ across ethnic groups and across gender. There were two major findings. First, there were statistically significant differences in functional gains across ethnic groups. FIM ratings increased from admission to discharge by 23.42 (SE [0.18]) for non-Hispanic whites; 22.62 (SE [0.32]) for Hispanics; 22.35 (SE [0.23]) and for non-Hispanic blacks. Second, we found statistically significant differences in functional gains among women compared to men. In this study, women began inpatient rehabilitation with lower FIM ratings than men but had greater gains in mean FIM rating from admission to discharge. These results suggest that the short term recovery of function after hip arthroplasty differs among ethnic minority groups and across gender.

Differences in FIM ratings have direct implications on the projected dependence of these patients as they leave formal care (i.e. the assistance required by others). Research on the clinical significance of changes in FIM ratings has demonstrated that each one point decrease in the total FIM instrument rating is associated with an average of between 3 and 6 minutes of daily help required from another person.¹⁴⁻¹⁶ There are variations in the amount of help required based on whether the change occurs in the low or high end of the FIM scale.¹⁷ The amount of help required (minutes per change in FIM point) also varies based on severity and impairment type.

The study also showed significant differences across the four ethnic groups as well as between men and women regarding discharge disposition. Non-Hispanic black, Hispanics, and men were more likely to be discharged to home. Previous investigations indicate that patients are often discharged to places other than home when they lack a supportive environment or adequate assistance from family and friends.¹⁸ Compared to men, women in this sample were more likely to live alone and not be married, which could have increased the potential of discharge to a skilled nursing facility or assisted living setting versus home. Previous studies also document that the decision to discharge the patient to a facility rather than to home is determined by the judgment of the inpatient team regarding the patient's level of progress.¹⁸

Alternative explanations for the observed gender and ethnic differences could be found among other influential factors such as delays in acceptance of the recommended hip replacement procedure,¹⁹ variations in referral patterns; variations in the underlying disease process; or variations in cultural and behavioral factors particular to men and women and to specific ethnic groups. For instance, previous investigations suggest that women might not be referred to orthopedic surgeons until they have a greater degree of disability,²⁰ and that pre-operative gender differences in physical function before surgery could be potentially responsible for the observed differences in post-operative physical function outcomes.²¹ Investigations also suggest that women may delay surgery due to fears of reduced independence following the surgical procedure,²¹ and of becoming a burden to their family.²² Similar disparities also appear to exist among ethnic groups. Research suggests that non-Hispanic black and Hispanic patients come to hip replacement surgery with lower physical function, more pain, and worse quality of life compared to non-Hispanic white patients.²³

Our investigation has a number of limitations. First, our dataset was predominantly white. This is consistent with population-based studies that document that in spite of the availability of insurance coverage, hip arthroplasty as an elective procedure is less used among black and Hispanic patients compared to white patients.²⁴ Escalante and colleagues argue that language barriers could also be an important influence on access to and willingness to consider hip arthroplasty.²⁴ Second, our study did not capture hip arthroplasty patients who had been discharged to skilled nursing facilities (SNF) or those who were discharged with home rehabilitation services following surgery; therefore our results cannot be generalized to the general hip arthroplasty population. Because of recent reinforcement of the 75% rule by CMS, patients who would have received inpatient rehabilitation are now being discharged to home care, to SNFs, or home health services. The 75% rule states that 75% of patients in a rehabilitation facility must have a diagnosis of stroke, spinal cord injury, congenital deformity, amputation, major multiple traumas, fracture of the femur (hip fracture), brain injury, polyarthritis, neurological disorders, or burns. Among patients with hip arthroplasty, only those classified as extremely obese (BMI > 50 kg/m²), or “frail” elderly status (> 85 yrs) are eligible for inpatient rehabilitation.²⁵ Future studies should examine patterns of recovery of function by ethnic groups in SNF and other post-acute care settings for this patient population.

CONCLUSION

By the year 2050, minority populations are projected to represent almost half of the total U.S. population. The two largest minority groups, non-Hispanic blacks and Hispanics are projected to increase from current levels to nearly 79 million by 2050 – 70% and 300% increase, respectively.²⁶ There is limited information for these two ethnic populations as well as other minority populations regarding health disparities and differences in long-term medical rehabilitation outcomes. More research is needed to understand potential differences among ethnic groups, plan appropriate intervention programs and make recommendations for policy change.

Acknowledgements

Sources of support: This research was supported by funding from the National Institute of Child and Human Development, grant nos. K12 HD052023 and K01 HD046682, and the National Institute on Aging, grant no. AG 024806-03.

Founding sources: This research was supported by funding from the National Institutes of Health, National Institute of Child Health and Human Development (K12-HD052023) and the National Institute on Aging (R01-AG024806).

References

1. Zuckerman JD. Hip fracture. *N Engl J Med* 1996;334:1519–25. [PubMed: 8618608]
2. Brander V, Stullberg S. Rehabilitation after hip and knee joint replacement. *Am J Phys Med Rehabil* 2006;85(Suppl):S98–S118. [PubMed: 17079984]
3. Munin M, Rudy T, Glynn N. Early inpatient rehabilitation after elective hip and knee arthroplasty. *JAMA* 1998;279:847–52. [PubMed: 9515999]
4. Bhandari VK, Kushel M, Price L, Schillinger D. Racial disparities in outcomes of inpatient stroke rehabilitation. *Arch Phys Med Rehabil* 2005;86:2081–6. [PubMed: 16271552]
5. Ottenbacher KJ, Smith PM, Illig SB, Linn RT, Gonzales VA, Ostir GV, et al. Disparity in health services and outcomes for persons with hip fracture and lower extremity joint replacement. *Med Care* 2003;41:232–41. [PubMed: 12555051]
6. Tosi L, Boyan B, Boskey A. Does sex matter in musculoskeletal health? *Journal of Bone & Joint Surgery* 2005;80:1631–47. [PubMed: 15995134]
7. Fiedler RC, Granger CV, Post LA. The Uniform Data System for Medical Rehabilitation: report of first admissions for 1998. *Am J Phys Med Rehabil* 2000;79:87–92. [PubMed: 10678608]
8. Guide for the Uniform Data System for Medical Rehabilitation (Version 5.1). State University of New York at Buffalo; Buffalo, NY: 1997.
9. World Health Organization. International classification of impairments, disabilities, and handicaps : a manual of classification relating to the consequences of disease. World Health Organization; Geneva: 1980. Albany, N.Y. : sold by WHO Publications Centre USA
10. Inpatient Rehabilitation Facility Patient Assessment Instrument (IRF-PAI) Training Manual. Uniform Data System for Medical Rehabilitation; Buffalo, NY: 2001.
11. Ottenbacher KJ, Mann WC, Granger CV, Tomita M, Hurren D, Charvat B. Interrater agreement and stability of functional assessment in the community-based elderly. *Arch Phys Med Rehabil* 1994;75:1297–301. [PubMed: 7993167]
12. Ottenbacher KJ, Hsu Y, Granger CV, Fiedler RC. The reliability of the functional independence measure: a quantitative review. *Arch Phys Med Rehabil* 1996;77:1226–32. [PubMed: 8976303]
13. SAS Institute. SAS/STAT User's Guide: Version 9. SAS Institute Inc; Cary, NC: 2004.
14. Granger CV, Cotter AC, Hamilton BB, Fiedler RC, Hens MM. Functional assessment scales: a study of persons with multiple sclerosis. *Arch Phys Med Rehabil* 1990;71:870–5. [PubMed: 2222154]
15. Granger CV, Divan N, Fiedler RC. Functional assessment scales. A study of persons after traumatic brain injury. *Am J Phys Med Rehabil* 1995;74:107–13. [PubMed: 7710723]
16. Hamilton BB, Deutsch A, Russell C, Fiedler RC, Granger CV. Relation of disability costs to function: spinal cord injury. *Arch Phys Med Rehabil* 1999;80:385–91. [PubMed: 10206599]
17. Segal ME, Gillard M, Schall R. Telephone and in-person proxy agreement between stroke patients and caregivers for the functional independence measure. *Am J Phys Med Rehabil* 1996;75:208–12. [PubMed: 8663929]
18. De Pablo P, Losina E, Phillips C, Fossel A, Mahomed N, Lingard E, et al. Determinants of discharge destination following elective total hip replacement. *Arthritis Rheum* 2004;100917;51
19. Maynard C, Fisher L, Passamani E, et al. Blacks in the coronary artery surgery study (CASS): Race and clinical decision making. *Am J Public Health* 1986;76:1446–8. [PubMed: 3490796]
20. Holtzman J, Saleh K, Kane R. Gender differences in functional status and pain in a medicare population undergoing elective total hip arthroplasty. *Med Care* 2002;40:447–50. [PubMed: 12021670]

21. Fitzgerald J, Orav EJ, Lee T, Marcantonio E, Poss R, Goldman L, et al. Patient quality of life during the 12 months following joint replacement surgery. *Arthritis Rheum* 2004;51:100–9. [PubMed: 14872462]
22. Karlson E, Daltroy L, Liang M, Eaton H, Katz J. Gender differences in patient preferences may underlie differential utilization of elective surgery. *Am J Med* 1997;102:524–30. [PubMed: 9217666]
23. Lavernia C, Lee D, Sierra R, Gomez-Marín O. Race, ethnicity, insurance coverage, and preoperative status of hip and knee surgical patients. *The Journal of Arthroplasty* 2004;19:978–85. [PubMed: 15586333]
24. Escalante A, Barrett J, del R, I, Cornell JE, Phillips CB, Katz JN. Disparity in total hip replacement affecting Hispanic Medicare beneficiaries. *Med Care* 2002;40:451–60. [PubMed: 12021671]
25. Centers for Medicare and Medicaid Services. Final rule: Medicare program; changes to the criteria for being classified as an inpatient rehabilitation facility. *Federal Register* 2004;25752:69.
26. Cheeseman C. Population projection of the United States by age, race, and Hispanic origin 1995 to 2050. *Current Population Reports* US Bureau of the Census. 1996

Table 1

Patient Characteristics by Race (N = 69,793)

Characteristic	White	Black	Hispanic	Asian	Total
N (%)	63,061 (90.4)	4,969 (7.1)	1,390 (2.0)	373 (0.5)	69,793 (100.0)
Mean age ± SD	72.1 (9.1)	67.6 (9.8)	68.4 (9.6)	69.6 (9.5)	71.7 (9.33)
Gender					
Male	21,295 (33.8)	1,515 (30.5)	500 (36.0)	96 (25.7)	23,406 (33.5)
Female	41,766 (66.2)	3,454 (69.5)	890 (64.0)	277 (74.3)	46,387 (66.5)
Married	34,332 (54.4)	1,854 (37.3)	684 (49.2)	212 (56.8)	40,139 (53.0)
Lives alone	21,375 (33.9)	1,788 (36.0)	340 (24.5)	81 (21.7)	25,626 (33.9)
Adm. FIM ± SD	77.7 (11.9)	77.1 (11.9)	76.3 (12.6)	80.6 (13.1)	79.9 (13.5)
D/C FIM ± SD	102.4 (12.4)	102.1 (13.1)	101.7 (13.4)	103.6 (11.4)	103.3 (11.9)
LOS ± SD	8.8 (4.1)	9.8 (4.2)	9.7 (4.1)	9.6 (4.1)	8.9 (4.1)
Comorbidities (one or more)	600 (0.9)	75 (1.5)	42 (3.0)	9 (2.4)	726 (1.0)
Residential region					
Northeast	20,179 (32.0)	1,192 (24.0)	334 (24.0)	83 (22.3)	21,636 (31.0)
Midwest	12,233 (19.4)	835 (16.8)	79 (5.7)	23 (7.0)	13,191 (18.9)
South	23,960 (38.0)	2,832 (57.0)	699 (50.3)	68 (18.3)	27,917 (40.0)
West	6,689 (10.6)	110 (2.2)	278 (20.0)	196 (52.4)	7,049 (10.1)

Table 2

Subjects Characteristics by Gender (n = 69,793)

Variable N (%)	Men 23,406 (33.5)	Women 46,387 (66.5)
Mean Age $\pm$ SD	70.6 (9.4)	72.2 (9.2)
Lives Alone	4,375 (18.6)	19,209 (41.4)
Married	17,243 (73.6)	19,839 (42.7)
Admission FIM $\pm$ SD	78.4 (12.2)	77.2 (11.8)
Discharge FIM $\pm$ SD	102.5 (12.7)	102.2 (12.3)
Length of Stay $\pm$ SD	8.3 (3.9)	9.2 (4.1)
Comorbidities (one or more)	140 (0.6)	586 (1.2)
Residential region Northeast	7,747 (33.1)	13,777 (29.7)
Midwest	4,167 (17.8)	9,045 (19.5)
South	9,011 (38.5)	18,694 (40.3)
West	2,481 (10.6)	4,871 (10.5)

Table 3

General Linear Models Estimates of Mean Change in Function after Inpatient Rehabilitation by Race/Ethnicity and Gender (n = 69,793)

	<u>Admission-Discharge^a</u> <u>b [SE]</u>
<i>Race/Ethnicity^b</i>	
White	23.42 [0.18]
Black	22.35 [0.23]
Hispanic	22.62 [0.32]
Asian	22.00 [0.53]
<i>Gender^b</i>	
Females	22.79 [0.23]
Males	22.40 [0.24]

^a Model adjusted for age, marital status, living arrangements (living alone vs. not living alone), co-morbidities, admission FIM score, length of inpatient rehabilitation stay, and residential region.

^b Race/Ethnicity and gender are included in the same model.

Table 4

Logistic Regression Examining the Odds of Inpatient Rehabilitation Discharge Disposition (n = 69,793).

Independent Variable	Total	N (%) Discharged Home ^a	OR (95% CI) ^b
Race			
Black	4,969	4,560 (91.7)	1.23 (1.07, 1.41)
Hispanic	1,390	1,302 (93.6)	1.51 (1.15, 1.99)
Asian	373	355 (95.1)	1.67 (0.93, 3.00)
White (reference)	63,061	57,867 (91.7)	
Age			0.97 (0.97, 0.98)
Gender			
Male		21,697 (92.7)	1.08 (1.01, 1.17)
Female (reference)		42,387 (91.4)	
Married			
Yes		35,140 (94.8)	2.42 (2.24, 2.61)
No		18,944 (88.5)	
Co-morbidities			
Yes		666 (91.7)	1.14 (0.83, 1.57)
No		63,418 (91.8)	
Length of Stay ^c			0.96 (0.96, 0.97)
Discharge FIM ^c			1.10 (1.10, 1.11)

^aUnadjusted model.^bMultivariate model controlling for age, marital status, co-morbidities, length of hospital stay, discharge FIM score, and residential region.^cPercentages not reported- Length of stay and FIM were used as a continuous variable.