Clinical Characteristics and Outcomes of Inpatient Falls During Inpatient Rehabilitation

A Case-Control Study

Se Won Lee, MD, Carol Elsakr, MD, Napatkamon Ayutyanont, PhD, Soohyoung Lee, PhD, and Mooyeon Oh-Park, MD

Abstract: Inpatient falls have a significant impact on the outcomes of older patients during inpatient rehabilitation. A retrospective case-control study was conducted using data of 7066 adults aged 55 yrs or older to evaluate significant predictors of inpatient falls during inpatient rehabilitation and the association of inpatient falls with discharge destination and length of stay. A stepwise logistic regression was used to model odds of inpatient falls and home discharge with demographic and clinical characteristic variables and a multivariate linear regression to evaluate the association between inpatient falls and length of stay.

Nine hundred thirty-one of 7066 patients (13.18%) had inpatient falls during inpatient rehabilitation. The group with inpatient falls had longer length of stay (14.22 ± 7.82 vs. 11.85 ± 5.33 days, $P < 0.0001$) and a decreased proportion of home discharges when compared with the group without inpatient falls. There were increased odds of inpatient falls among patients with diagnoses of head injury, other injuries, a history of falls, dementia, a divorced marital status, and a use of laxatives or anticonvulsants. Inpatient falls were associated with an increased length of stay (coefficient = 1.62, confidence interval = 1.19–2.06) and decreased odds of home discharge (odds ratio = 0.79, confidence interval = 0.65–0.96) after inpatient rehabilitation. This knowledge may be incorporated into strategies for reducing inpatient falls during inpatient rehabilitation.

Key Words: inpatient falls, length of stay, discharge, risk factors, older adults, inpatient rehabilitation

(*Am J Phys Med Rehabil* 2023;102:715–719)

Inpatient falls (IFs) are the most common inpatient accident, contributing to up to 70% of all inpatient accidents.[1] They are particularly common in inpatient rehabilitation units (IRUs) with up to 39% of them being due to impaired mobility, which is widely prevalent among patients in IRUs.[2,3] Among patients who experience IFs, 30% sustain physical injury, of which 4%–6% are serious (e.g., fractures or head injuries).[4,5] Inpatient falls also generally increase the cost of care as well as the length of stay (LOS) among hospitalized patients.[6]

Several predisposing factors for IFs have been identified, including poor balance and gait, history of falls before hospitalization, increased age, impaired cognition, dizziness, visual impairments, and the use of certain medications such as opioids, benzodiazepines, antipsychotics, and other sedatives.[7–9] Previous studies and guidelines to decrease IFs were based on data from general medical units. Studies of patient populations in IRUs are limited, despite the vast majority of patients in IRUs having multiple predisposing factors for falls. Addressing this gap in knowledge is essential for developing fall reduction strategies in IR settings, which can be done with updated epidemiology information of IFs among IRU patients including correlates with IFs using large data. In addition, it is important to examine the association of IFs with key quality metrics of IRUs such as LOS and discharge to community to optimize these metrics.

The aims of this study are to identify significant predictors of IFs and home discharge among patients in IRUs and to determine whether IFs are associated with increased LOS at IRUs.

METHODS

This is a retrospective case-control study using patient data drawn from 61 IRUs in one of the largest private healthcare systems in the United States (Appendix 1, Supplemental Digital Content 1, http://links.lww.com/PHM/C45). Inclusion criteria were adults 55 yrs or older admitted to IRUs from January 1, 2018, to December 31, 2019. Exclusion criteria were readmissions to IRUs and admission diagnosis of "fall."

The case group included patients with the *International Classification of Disease*, *Tenth Revision*, *Clinical Modification* (*ICD-10-CM*) "fall" diagnosis (W00–W19) at discharge or patients who had falls documented in nursing notes during their IR stay. The control group consisted of the remaining patients without IFs who met inclusion and exclusion criteria.

This study was reviewed and approved as exempt by the institutional review board at the authors' institution under category 4 (secondary analysis of existing data sets); therefore, patient consent was waived by the institutional review board. The study findings are in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology guidelines (see Supplementary Checklist, Supplemental Digital Content 2, http://links.lww.com/PHM/C46).

VARIABLES

Demographic variables considered in this study included age, sex, race (i.e., White, Black, Asian, and other), ethnicity (i.e.,

From the Sunrise Health GME Consortium, Las Vegas, Nevada (SWL, CE, NA); Yeshiva University, New York, New York (SL); and Burk Rehabilitation Hospital/Albert Einstein College of Medicine, White Plains, New York (MO-P).

All correspondence should be addressed to: Se Won Lee, MD, Sunrise Health GME Consortium Affiliated with University of Nevada Las Vegas, MountainView Medical Center, 2880 N Tenaya Way, 2nd Flr, Las Vegas, NV.

Data Availability: The datasets generated during and/or analyzed during the current study are not available.

This research was supported (in whole or in part) by Hospital Corporation of America (HCA) healthcare and/or an HCA-affiliated entity. The views expressed in this publication represent those of the author(s) and do not necessarily represent the official views of HCA healthcare or any of its affiliated entities.

Carol Elsakr is in training.

Financial disclosure statements have been obtained, and no conflicts of interest have been reported by the authors or by any individuals in control of the content of this article.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (www.ajpmr.com).

ISSN: 0894-9115

DOI: 10.1097/PHM.0000000000002262

Hispanic vs. non-Hispanic), body mass index, and socioeconomic status (i.e., insurance coverage and marital status).[10]

Clinical characteristics were studied by further classifying fall diagnoses with the *ICD-10-CM* codes (W00–W19). The Charlson Comorbidity Index (CCI), a validated, weighted scoring system, was used to quantify medical comorbidities.[11] The CCI has been used widely to stratify risk following medical conditions, including physically disabling conditions such as stroke,[12] osteoarthritis,[13] and spine disorders.[14] Furthermore, *ICD-10-CM* codes have been used to identify common fall-related injuries, circumstances of IFs, and possible contributing causes.[15]

Medications received by patients within the first 24 hrs during their IRU stay were organized using the therapeutic classification system from the US Pharmacopeia Drug Classification System; their use was then compared between that of the patients with IFs and that of the control group patients.[16] The 10 most frequently used medications during IR and medications previously known to be linked to falls were analyzed to see whether they had an association with IFs.

Other clinical data gathered included average blood pressure during the first 24 hrs, LOS, in-hospital mortality, and disposition after IR.[17]

DATA ANALYSIS

Descriptive statistics were used to represent demographic and clinical characteristics via χ^2 for nominal or ordinal variables, and independent two-sample *t* test, or Wilcoxon rank-sum test for continuous variables, depending on the normal distribution.

Stepwise logistic regression models were used to identify the significant predictors of IFs (dependent variables) during IR stay and to evaluate significant relationships between predictive variables and the outcome variables of home discharge (i.e., 0: community/home discharge vs. 1: other than home discharge). Potential predictors analyzed included demographic, clinical characteristics, medications used, and average blood pressure in the first 24 hrs. A *P* value less than 0.05 was considered significant.

Analyses were performed using Stata version 17 (StataCorp, College Station, TX).

RESULTS

There were 7066 distinct patients who met the inclusion criteria from January 1, 2018, to December 31, 2019, across the healthcare system. Of these, 931 patients (13.18%) were reported to have IFs. Common admitting diagnosis groups were nervous system diseases other than epilepsy ($n = 4447$, 62.94%), musculoskeletal diseases ($n = 4297$, 60.81%), mental behavioral disorders other than dementia ($n = 3820$, 54.06%), other injuries ($n = 2557$, 36.19%), and head injury ($n = 1699$, 24.04%).

Among patients documented with an *ICD-10-CM* fall diagnosis at discharge ($n = 519$, 55.75% of all 931 patients with falls), the most common subcategory was "other slipping, tripping and stumbling" (W18, $n = 459$, 87.6%), followed by "other fall from one level to another" (W17, $n = 30$, 5.73%), "unspecified fall" (W19, $n = 19$, 3.63%), and "fall involving bed" (W06, $n = 6$, 1.15%).

The median age of all patients was 75 yrs with 50.7% being male. There was no significant difference of fall rates between age groups (161 [13.69% of 1176] in 55–64 yrs, 271 [12.28% of 2207] in 65–74 yrs, and 499 [13.55% of 3683] over 75 yrs, $P = 0.321$). Body mass index was higher in the control (no-fall) group (28.96 ± 7.6 vs. 27.41 ± 6.93, $P < 0.0001$). The average LOS was significantly longer in the case (fall) group than that of the control group (14.22 ± 7.82 vs. 11.85 ± 5.33, $P < 0.0001$). The CCI was slightly higher in the control group (5.89 ± 2.57 vs. 5.62 ± 2.46, $P < 0.0001$). However, cerebrovascular disorder, dementia, and hemiplegia or paraplegia was more common in the case group (10.85% vs. 8.69%, $P = 0.032$; 12.57% vs. 8.51%, $P < 0.0001$; 9.77% vs. 5.17%, $P < 0.0001$, respectively). Other results concerning demographic information are summarized in Table 1.

The most frequently used medications were antihypertensive (84.09%), followed by laxatives (76.99%), antacids (69.35%), and opioids (43.65%). Laxatives and anticonvulsants were used more frequently in the fall group (81.74% vs. 76.27%, $P < 0.0001$, and 32.08 vs. 27.6%, $P = 0.005$, respectively), while anticoagulants/antiplatelets and antacids were more frequently taken in the control group (56.59% vs. 48.12%, $P < 0.0001$, and 69.78 vs. 66.49%, $P = 0.042$). Please see Appendix 2 (Supplemental Digital Content 1, http://links.lww.com/PHM/C45) for more details.

Inpatient falls were associated independently with increased LOS by 1.62 days (coefficient = 1.62, confidence interval [CI] = 1.19–2.06) after adjusting for other predictive variables.

From the stepwise regression analysis (Table 2), admitting diagnoses of head injury, history of other injuries, and history of falls were associated with increased odds of IFs during stay at IRUs (odds ratio [OR] = 2.07, 95% CI = 1.65–2.61 for head injury; OR = 3.14, CI = 2.46–3.99 for history of falls; and OR = 1.31, CI = 1.07–1.62 for other injury, respectively). The medical comorbidity of dementia was associated with increased odds of IFs (OR = 1.31, CI = 1.02–1.67). The use of anticonvulsants and laxatives was associated with increase odds of IFs (OR = 1.20, CI = 1.01–1.43 and OR = 1.24, CI = 1.01–1.52, respectively). Divorced marital status was associated with increased odds of IFs as well (OR = 1.44, CI = 1.11–1.88).

With respect to discharge disposition outcome, 4397 patients (62.23%) were discharged to home with home services, and 1254 (17.75%) patients without home services. Nonhome discharges included discharge to acute hospital ($n = 657$, 9.3%), to skilled nursing facility ($n = 625$, 8.85%), to hospice ($n = 61$, 0.86%), against medical advice ($n = 31$, 0.44%), and long-term care hospital ($n = 23$, 0.33%). Decreased proportion of home discharges (with or without services) was found in the group with IFs (75.19% vs. 80.70%, $P < 0.0001$). Eighteen patients died (1.53%), and no significant difference in mortality was found between the groups with or without IFs (Table 1). Adjusted for other potential predictors, IFs were associated with decreased odds of discharge to home after IR (OR = 0.79, CI = 0.65–0.96) based on stepwise logistic regression analysis. See Appendix 3 (Supplemental Digital Content 1, http://links.lww.com/PHM/C45) for a summary of the stepwise regression analysis of the relationship between home discharge and contributing factors.

DISCUSSION

To the best of our knowledge, this is the first study analyzing data of more than 7000 patients from 61 IRUs describing the demographic and clinical characteristics of patients with IFs and the relationship between IFs, discharge disposition,

TABLE 1. Demographic and clinical characteristics of inpatient falls vs. control group in IRUs

	Total, $N = 7066$	No Fall, $n = 6135$ (86.82%)	Inpatient Falls, $n = 931$ (13.18%)	P
Age	74.80 ± 9.59	74.80 ± 9.59	75.10 ± 9.85	<0.0001
Male sex	3579 (50.65%)	3109 (50.68%)	470 (50.48%)	0.913
Body mass index	28.76 ± 7.54	28.96 ± 7.60	27.41 ± 6.93	<0.0001
Race and ethnicity				0.021
White	5430 (76.85%)	4684 (76.35%)	746 (80.13%)	
Black	677 (9.58%)	611 (9.96%)	66 (7.09%)	
Asian	111 (1.57%)	94 (1.53%)	17 (1.83%)	
Other	158 (2.24%)	134 (2.18%)	24 (2.58%)	
Hispanic	690 (9.77%)	612 (9.98%)	78 (8.38%)	
Medical coverage				0.889
Medicare and Medicaid	6134 (86.81%)	5321 (86.73%)	813 (87.33%)	
No Ins	58 (0.82%)	52 (0.85%)	6 (0.64%)	
Other	237 (3.35%)	208 (3.39%)	29 (3.11%)	
Private	637 (9.02%)	554 (9.03%)	83 (8.92%)	
Marital status				0.341
Married	2724 (45.48%)	2381 (45.73%)	343 (43.81%)	
Divorced	520 (8.68%)	437 (8.39%)	83 (10.6%)	
Other/unknown	181 (3.02%)	157 (3.02%)	24 (3.07%)	
Single	1195 (19.95%)	1037 (19.92%)	158 (20.18%)	
Widowed	1370 (22.87%)	1195 (22.95%)	175 (22.35%)	
Charlson Comorbidity Index	5.85 ± 2.55	5.89 ± 2.57	5.62 ± 2.46	0.003
LOS	12.16 ± 5.78	11.85 ± 5.33	14.22 ± 7.82	<0.0001
In hospital mortality	18 (0.25%)	17 (0.28%)	1 (0.11%)	0.339
Discharge destination				<0.0001
Home without service	1254 (17.75%)	1117 (18.21%)	137 (14.72%)	
Home with service	4397 (62.23%)	3834 (62.49%)	563 (60.47%)	
Skilled nursing home	625 (8.85%)	504 (8.22%)	92 (9.88%)	
Transfer to hospital	657 (9.3%)	565 (9.21%)	121 (13%)	
Long term acute care hospital	23 (0.33%)	18 (0.29%)	4 (0.43%)	
Hospice	61 (0.86%)	53 (0.86%)	8 (0.86%)	
Discharge against medical advice	31 (0.44%)	27 (0.44%)	5 (0.54%)	

Values are mean ± SD or absolute number (relative frequencies) depending on the variable.

and LOS. Inpatient falls continue to impose physical and emotional burdens to patients, families, and clinical staff. Inpatient falls are also costly to healthcare systems and potential sources of medical malpractice. This study showed that patients with IFs had increased LOS and reduced odds of home discharge after IR similar to the findings in different hospital settings.[18–20]

There were some unique characteristics of patients with IFs in IRUs compared with the previously reported populations in other hospital units. Contrary to the previous reports of increased IFs associated with increased medical comorbidities (higher CCI), the current study showed a lower CCI in the group with IFs compared with that of the control group among patients in IRUs.[19,20] However, specific neurological comorbidities (i.e., cerebrovascular disease, dementia, and hemiplegia or paraplegia) were more common in the group with IFs. In addition, the comorbidity of dementia was independently associated with increased odds of IFs in IRUs as previously seen in previous literature.[9] This finding suggests that using specific medical comorbidities rather than a generalized medical comorbidities index system can be more effective when targeting vulnerable populations in IRUs at risk for IFs. In addition, there was no significant difference of IFs between patients who were 55–64 yrs and patients older than 75 yrs. This may indicate that the aging effect on patients with significant mobility impairments requiring IR is not as significant as it is on the general population once adjusting for other risk factors of IFs, such as history of falls and dementia.

TABLE 2. Stepwise logistic regression analysis of relationship between inpatient falls and contributing factors, pseudo $R^2 = 0.118$

Home Discharge	OR	P	95% CI	
Demographic				
Divorced marital status	1.44	0.01	1.11	1.88
Admitting diagnosis				
Head injuries	2.07	0.00	1.65	2.61
History of falls	1.31	0.01	1.07	1.62
Other injury	3.14	0.00	2.46	3.99
Comorbidities				
Dementia	1.31	0.03	1.02	1.67
Medication				
Anticonvulsants	1.20	0.04	1.01	1.43
Laxatives	1.24	0.04	1.01	1.52

This study showed that patients with admitting diagnoses of head injury, history of falls, and other injury experienced IFs at IRUs similar to previous findings in general acute care hospital settings.[7,21,22] These vulnerable patients warrant additional attention and measures when admitted to the IRUs after an acute care hospitalization.

Interestingly, divorced marital status was associated with increased IFs among patients in IRUs. It is unclear whether divorced marital status may be a proxy for other factors such as living alone and further study may be needed to clarify this finding. In past literature, patients who were single were associated with a higher rate of falls in the community; however, studies evaluating socioeconomic factors contributing to IFs in IRUs are scarce.[23] It may be reasonable to provide specific recommendations to mitigate falls based on living status (alone vs. with family) including fall prevention strategies.[24] In terms of medication, there were increased odds of IFs in patients taking laxatives and anticonvulsants in this study, similar to results of previous studies.[25,26] Although anticonvulsants have been recognized as high-risk medications with their adverse effects on the central nervous system, laxatives are often regarded as safe.[27,28] Because laxatives can cause patients to use bathrooms more frequently or urgently, which could create a situation where a fall may occur, it might be advantageous for patients on laxatives to specifically be educated on preventing IFs during their IRU stay.[28] However, this study did not yield data on medications that may be seen as likely contributors to IFs, such as diuretics (given their associated urinary urgency), sleep medications (given the potential associated altered mental status), and antibiotics (given the potential associated diarrhea with frequent toileting). This study also focused on medications given to patients during the first 24 hrs of their IRU stay; any changes made to patients' medications beyond the first 24 hrs of their stay were not examined, which limits this study as some of those changes may have impacted the occurrence of IFs. Furthermore, this study did not gather information on when IFs occurred since IF occurrence was mostly identified via *ICD-10* codes; this limits inferences made regarding the impact any medication may have on IFs as it is not clear how soon a fall occurred after any medication was given. In addition, not knowing the timing of IFs limits the identification of situations that may increase the risk of IFs. For example, it is not clear based on this study whether IFs are more likely to occur during therapy sessions or during night shifts.

Knowledge of specific demographic and clinical variables such as the above admitting diagnoses and marital status can help physiatrists recognize patients at risk of IFs during IR.

This study illustrates IFs' relationship with key quality metrics of IRUs. They are associated with increased LOS during IR and decreased home discharge after IR. Decreased home discharges among patients with IFs after IR is not surprising as IFs suggest continued mobility impairment. Patients with IFs may represent the population who requires longer rehabilitation. A proactive approach for analyzing the specific rehabilitation needs of these patients may help in optimizing LOS and discharge planning.

The current study excluded patients with an admitting diagnosis of fall, a well-known risk factor for IFs. This exclusion may have decreased the size of the study population; however, it may have also been helpful in highlighting unrecognized groups vulnerable to IFs, considering that patients admitted with falls are among those at highest risk for IFs.

The results of this study can assist in making existing IF prevention tool kits more specific to patients in IRUs. The development of more practical modeling systems is feasible, as variables in this study can be easily obtained using existing electronic health record systems without the need for further individual measurements.

LIMITATIONS

This study has a number of limitations. The study population was limited to IRUs in a private for-profit healthcare system, which may limit generalizability to other systems including, freestanding rehabilitation hospitals, public healthcare systems, and Veterans Affairs hospitals. The implications of this study are also limited to the study population of adults aged at least 55 yrs.

This study was a retrospective cross-sectional analysis with the inability to establish causality and the possibility of overlooking compounding variables. The hospital discharge-based data used in this study relied on *ICD-10-CM* codes and nursing documentation; thus, there are potential coding related limitations that could not be addressed during this study. For example, some admitting diagnoses of head injury and hip fracture may have been secondary to falls without an inputted fall diagnosis upon admission. Nevertheless, modeling based on real-world data with such limitations can provide practical guidelines reflecting real-world practice patterns.

CONCLUSIONS

Inpatient falls during the IRU stay were associated with history of dementia, admitting diagnoses of head injury, history of falls, and/or other injury, use of anticonvulsants and laxatives, and a divorced marital status. Patients with IFs were less likely to be discharged home and had increased LOS at IRUs. This study's findings can help identify populations vulnerable to IFs during IR and can help guide strategies to prevent IFs among high-risk patients.

REFERENCES

1. Schwendimann R, Buhler H, De Geest S, et al: Characteristics of hospital inpatient falls across clinical departments. *Gerontology* 2008;54:342–8
2. He J, Dunton N, Staggs V: Unit-level time trends in inpatient fall rates of US hospitals. *Medical Care* 2012;50:801–7
3. Campanini I, Mastrangelo S, Bargellini A, et al: Feasibility and predictive performance of the Hendrich Fall Risk Model II in a rehabilitation department: a prospective study. *BMC Health Serv Res* 2018;18:18
4. Ash KL, MacLeod P, Clark L: A case control study of falls in the hospital setting. *J Gerontol Nurs* 1998;24:7–15
5. Morse JM, Prowse MD, Morrow N, et al: A retrospective analysis of patient falls. *Can J Public Health* 1985;76:116–8
6. Hill AM, Jacques A, Chandler AM, et al: In-hospital sequelae of injurious falls in 24 medical/surgical units in four hospitals in the United States. *Jt Comm J Qual Patient Saf* 2019;45:91–7
7. Frels C, Williams P, Narayanan S, et al: Iatrogenic causes of falls in hospitalised elderly patients: a case-control study. *Postgrad Med J* 2002;78:487–9
8. Park H, Satoh H, Miki A, et al: Medications associated with falls in older people: systematic review of publications from a recent 5-year period. *Eur J Clin Pharmacol* 2015;71:1429–40
9. Tinetti ME, Kumar C: The patient who falls: "It's always a trade-off". *JAMA* 2010;303:258–66
10. Memtsoudis SG, Dy CJ, Ma Y, et al: In-hospital patient falls after total joint arthroplasty: incidence, demographics, and risk factors in the United States. *J Arthroplasty* 2012;27:823–8.e1
11. Austin SR, Wong Y-N, Uzzo RG, et al: Why summary comorbidity measures such as the Charlson Comorbidity Index and Elixhauser score work. *Medical Care* 2015;53:e65–72
12. Tessier A, Finch L, Daskalopoulou SS, et al: Validation of the Charlson Comorbidity Index for predicting functional outcome of stroke. *Arch Phys Med Rehabil* 2008;89:1276–83
13. Le TK, Montejano LB, Cao Z, et al: Health care costs in US patients with and without a diagnosis of osteoarthritis. *J Pain Res* 2012;5:23–30
14. Mannion AF, Bianchi G, Mariaux F, et al: Can the Charlson Comorbidity Index be used to predict the ASA grade in patients undergoing spine surgery? *Eur Spine J* 2020;29:2941–52

15. Stevens JA, Rudd RA: Circumstances and contributing causes of fall deaths among persons aged 65 and older: United States, 2010. *J Am Geriatr Soc* 2014;62:470–5
16. USP Model Guidelines Expert Committee; U.S. Pharmacopeia: Narrative review: the U.S. pharmacopeia and model guidelines for Medicare Part D formularies. *Ann Intern Med* 2006; 145:448–53
17. Bradley SM, Karani R, McGinn T, et al: Predictors of serious injury among hospitalized patients evaluated for falls. *J Hosp Med* 2010;5:63–8
18. Krauss MJ, Evanoff B, Hitcho E, et al: A case-control study of patient, medication, and care-related risk factors for inpatient falls. *J Gen Intern Med* 2005;20:116–22
19. Brand CA, Sundararajan V: A 10-year cohort study of the burden and risk of in-hospital falls and fractures using routinely collected hospital data. *Qual Saf Health Care* 2010;19:e51
20. Wong CA, Recktenwald AJ, Jones ML, et al: The cost of serious fall-related injuries at three midwestern hospitals. *Jt Comm J Qual Patient Saf* 2011;37:81–7
21. Halfon P, Eggli Y, Van Melle G, et al: Risk of falls for hospitalized patients: a predictive model based on routinely available data. *J Clin Epidemiol* 2001;54:258–66
22. Choi Y, Staley B, Henriksen C, et al: A dynamic risk model for inpatient falls. *Am J Health-Syst Pharm* 2018;75:1293–303
23. Chang VC, Do MT: Risk factors for falls among seniors: implications of gender. *Am J Epidemiol* 2015;181:521–31
24. Lee D-CA, McDermott F, Hoffmann T, et al: 'They will tell me if there is a problem': limited discussion between health professionals, older adults and their caregivers on falls prevention during and after hospitalization. *Health Educ Res* 2013;28:1051–66
25. Callis N: Falls prevention: Identification of predictive fall risk factors. *Appl Nurs Res* 2016; 29:53–8
26. Lavsa SM, Fabian TJ, Saul MI, et al: Influence of medications and diagnoses on fall risk in psychiatric inpatients. *Am J Health-Syst Pharm* 2010;67:1274–80
27. Cumbler EU, Simpson JR, Rosenthal LD, et al: Inpatient falls: defining the problem and identifying possible solutions. Part I: an evidence-based review. *Neurohospitalist* 2013;3: 135–43
28. Bloch F, Thibaud M, Dugué B, et al: Laxatives as a risk factor for iatrogenic falls in elderly subjects. *Drugs Aging* 2010;27:895–901