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Associations between lifestyle, physical and social environments and frailty among Chinese older people: a multilevel analysis

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Abstract

BACKGROUND: Frailty represents a public health priority and an increasingly prevalent condition in the ageing population. It is seen as reflecting an interaction among individual factors and a range of environmental elements. This study aims to examine the association between frailty and individual factors, physical and social environments among Chinese older people.

METHODS: The data were from the Shanghai Healthy City Survey in 2017, which sampled 2559 older people aged ≥ 60 years from 67 neighbourhoods. The FRAIL scale was used to assess frailty, and social and physical environments were assessed using validated and psychometrically tested instruments. Individual factors included age, gender, education, employment, marital status, smoking, drinking, physical exercise, organization participation, self-rated health and psychological well-being. A multilevel analysis was conducted to examine whether physical and social environments were associated with frailty.

RESULTS: The prevalence of pre-frailty and frailty were 39.5 and 16.9%, respectively. The prevalence of frailty increased with age from 14.6% (60-64 years) to 26.5% (≥ 75 years). After adjusting for age and/or gender, older age, women, and those with low education, alcohol dependence, physical inactivity, poor self-rated health, or psychological disorders had a higher prevalence of frailty. The multilevel analysis indicated that after controlling for individual covariates, compared to the 1st quartile of aesthetic quality, the odds ratio (OR) of frailty for the 4th quartile was 0.65 (0.47-0.89); compared to the 1st quartile of walking environment, the OR of frailty for the 4th quartile was 0.43 (0.19-0.95); compared to the 1st quartile of social cohesion, the OR of frailty for the 4th quartile was 0.73 (0.54-0.99); compared to the 1st quartile of social participation, the ORs of frailty for the 2nd, 3rd and 4th quartiles were 0.76 (0.59-0.97), 0.59 (0.45-0.77) and 0.59 (0.45-0.77), respectively.

CONCLUSIONS: Frailty is a highly prevalent health condition among the aged population in China. Healthcare should focus on frail elderly who are older age, women, those with low education, and those with mental health problems. It may decrease frailty among Chinese older people to encourage social participation and healthy behaviours and to build aesthetic, walkable and cohesive neighbourhoods.

PDF Y Endnote Y

Comparison of hospitalised trends, treatment cost and health outcomes of fall-related hip fracture for people aged ≥ 65 years living in residential aged care and the community

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Osteoporos. Int. 2018; ePub(ePub): ePub.



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DOI 10.1007/s00198-018-4800-6 **PMID** 30569228

Abstract

This study compared hip fracture rates and health outcomes of older people living in residential aged care facilities (RACFs) to the community. The RACF resident age-standardised hospitalisation rate was five times higher than the community rate and declining. RACF residents experience overall worse health outcomes and survival post-hip fracture.

INTRODUCTION: To compare hospitalisation trends, characteristics and health outcomes following a fall-related hip fracture of older people living in residential aged care facilities (RACFs) to older people living in the community.

METHODS: A retrospective analysis of fall-related hip fracture hospitalisations of people aged ≥ 65 years during 1 July 2008 and 30 June 2013 in New South Wales (NSW), Australia's largest populated state. Linked hospitalisation, RACF and Aged Care Assessment Appraisal data collections were examined. Negative binomial regression examined the significance of hospitalisation temporal trends.

RESULTS: There were 28,897 hip fracture hospitalisations. One-third were of older people living in RACFs. The hospitalisation rate was 2180 per 100,000 (95%CI: 2097.0-2263.7) for RACF residents and 390 per 100,000 (95%CI 384.8-395.8) for older people living in the community. The hospitalisation rate for RACF residents was estimated to decline by 2.9% annually (95%CI: - 4.3 to - 1.5). Hospital treatment cost for hip fractures was AUD\$958.5 million. Compared to older people living in the community, a higher proportion of RACF residents were aged ≥ 90 years (36.1% vs 17.2%), were female (75.3% vs 71.8%), had > 1 Charlson comorbidity (37.6% vs 35.6%) and 58.2% had dementia (vs 14.4%). RACF residents had fewer in-hospital rehabilitation episodes (18.7% vs 60.9%) and a higher proportion of unplanned readmissions (10.6% vs 9.1%) and in-hospital mortality (5.9% vs 3.3%) compared to older people living in the community.

CONCLUSIONS: RACF residents are a vulnerable cohort of older people who experience worse health outcomes and survival post-hip fracture than older people living in the community. Whether access to individualised hip fracture rehabilitation for RACF residents could improve their health outcomes should be examined.

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Delivery of fall prevention interventions for at-risk older adults in rural areas: findings from a national dissemination

Smith ML, Towne SD, Herrera-Venson A, Cameron K, Horel SA, Ory MG, Gilchrist CL, Schneider EC, DiCocco C, Skowronski S.

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Abstract



Falls incidence rates and associated injuries are projected to increase among rural-dwelling older adults, which highlights the need for effective interventions to prevent falls and manage fall-related risks. The purpose of this descriptive study was to identify the geospatial dissemination of eight evidence-based fall prevention programs (e.g., A Matter of Balance, Stepping On, Tai Chi, Otago Exercise Program) across the United States (U.S.) in terms of participants enrolled, workshops delivered, and geospatial reach. These dissemination characteristics were compared across three rurality designations (i.e., metro areas; non-metro areas adjacent to metro areas; and, non-metro areas not adjacent to metro areas). Data were analyzed from a national repository of 39 Administration for Community Living (ACL) grantees from 2014–2017 (spanning 22 states). Descriptive statistics were used to assess program reach, delivery-site type, and completion rate by rurality. Geographic information systems (GIS) geospatially represented the collective reach of the eight interventions. Of the 45,812 participants who attended a fall prevention program, 12.7% attended workshops in non-metro adjacent areas and 6.6% attended workshops in non-metro non-adjacent areas. Of the 3755 workshops delivered (in over 550 unique counties), most were delivered in senior centers (26%), residential facilities (20%), healthcare organizations (13%), and faith-based organizations (9%). On average, the workshop attendance/retention rates were consistent across rurality (~70%).

FINDINGS highlight the need to diversify the delivery infrastructure for fall prevention programs to adequately serve older adults in rural areas. Ongoing efforts are needed to offer sustainable technical assistance and to develop scalable clinical-community referral systems to increase fall prevention program participation among rural-dwelling older adults.

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Does hands-on guarding influence performance on the functional gait assessment?

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(Copyright © 2018, American Physical Therapy Association)

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Abstract

BACKGROUND AND PURPOSE: An accurate fall risk assessment is an important component of fall prevention, though a fall could occur during testing. To minimize this risk, different guarding methods are used, though there is disagreement regarding the optimal method. The purpose of this study was to compare the effect of 2 guarding methods, contact guarding (CG) and standby guarding (SG), on performance during the Functional Gait Assessment (FGA). We hypothesized that (1) there would not be a significant difference in FGA scores when comparing CG with SG, and (2) participants would not perceive a difference between the 2 guarding methods.

METHODS: Twenty-three community-dwelling older adults, mean age 73.6 (SD = 6.2) years, participated in this study. Each participant completed 2 trials of the FGA, one with CG and another with SG. Guarding for all trials was provided by the same experienced physical therapist (PT) for this within-subjects design. All trials were video recorded for review by 2 PT raters who were blinded to the purpose of the study.



RESULTS AND DISCUSSION: Functional Gait Assessment scores for the 2 PT raters indicated high internal agreement for both CG and SG conditions (CG: intraclass correlation coefficient [ICC] = 0.949; SG: ICC = 0.935), and CG FGA scores did not significantly differ from SG FGA scores ($t_{22} = 0.15$, $P = .882$). Furthermore, none of the participants perceived a difference in guarding methods.

CONCLUSIONS: The results of this study indicate that hands-on guarding does not significantly influence performance on the FGA when the guarding is provided by an experienced PT and the participant is a community-dwelling older adult.

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Dual-task exercise reduces cognitive-motor interference in walking and falls after stroke

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Abstract

Background and Purpose- Functional community ambulation requires the ability to perform mobility and cognitive task simultaneously (dual-tasking). This single-blinded randomized controlled study aimed to examine the effects of dual-task exercise in chronic stroke patients.

METHODS- Eighty-four chronic stroke patients (24 women; age, 61.2 ± 6.4 years; time since stroke onset, 75.3 ± 64.9 months) with mild to moderate motor impairment (Chedoke-McMaster leg motor score: median, 5; interquartile range, 4-6) were randomly allocated to the dual-task balance/mobility training group, single-task balance/mobility group, or upper-limb exercise (control) group. Each group exercised for three 60-minute sessions per week for 8 weeks. The dual-task interference effect was measured for the time to completion of 3 mobility tests (forward walking, timed-up-and-go, and obstacle crossing) and for the correct response rate during serial-3-subtractions and verbal fluency task. Secondary outcomes included the Activities-specific Balance Confidence Scale, Frenchay Activities Index, and Stroke-specific Quality of Life Scale. The above outcomes were measured at baseline, immediately after, and 8 weeks after training. Fall incidence was recorded for a 6-month period posttraining.

RESULTS- Only the dual-task group exhibited reduced dual-task interference in walking time posttraining (forward walking combined with verbal fluency [9.5%, $P=0.014$], forward walking with serial-3-subtractions [9.6%, $P=0.035$], and the timed-up-and-go with verbal fluency [16.8%, $P=0.001$]). The improvements in dual-task walking were largely maintained at the 8-week follow-up. The dual-task cognitive performance showed no significant changes. The dual-task program reduced the risk of falls and injurious falls by 25.0% (95% CI, 3.1%-46.9%; $P=0.037$) and 22.2% (95% CI, 4.0%-38.4%; $P=0.023$), respectively, during the 6-month follow-up period compared with controls. There was no significant effect on other secondary outcomes ($P>0.05$).

CONCLUSIONS- The dual-task program was effective in improving dual-task mobility, reducing falls and fall-related injuries in ambulatory chronic stroke patients with intact cognition. It had no

significant effect on activity participation or quality of life. Clinical trial registration- URL: <https://www.clinicaltrials.gov>. Unique identifier: NCT02270398.

PDF N Endnote Y

Early prediction of falls after stroke: a 12-month follow-up of 490 patients in The Fall Study of Gothenburg (FallsGOT)

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Clin. Rehabil. 2018; ePub(ePub): ePub.

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DOI 10.1177/0269215518819701 **PMID** 30569752

Abstract

OBJECTIVE: To identify the incidence of falls and factors present shortly after stroke, which are associated with the occurrence of falls over the first 12 months after stroke onset, following discharge from inpatient rehabilitation.

DESIGN: Prospective follow-up study. **SETTING::** Stroke unit and outpatient department. **SUBJECTS::** A total of 490 individuals with acute stroke.

METHODS: Postural control was assessed using the Swedish modified version of the Postural Assessment Scale for Stroke Patients. Data on self-reported falls were collected using a standardized questionnaire at three months after discharge and six and 12 months after stroke onset.

Associations between characteristics during the acute phase after a stroke and falls after six and 12 months were investigated using univariable and multivariable regression analyses. **MAIN**

MEASURES: The endpoint was a self-reported fall.

RESULTS: Within three months after discharge, 38 of 165 respondents (23%) had experienced at least one fall. Within six and 12 months after stroke onset, respectively, 108 of 376 (29%) and 140 of 348 (40%) of the respondents had experienced at least one fall. Poor postural control (odds ratio 3.92, 95% confidence interval 2.07-7.45, $P < 0.0001$) and using a walking aid (odds ratio 2.84, 95% confidence interval 1.71-4.72, $P < 0.0001$) were predictors of falls after discharge within 12 months after stroke onset. The same variables were independent predictors of falls within six months.

CONCLUSION: Poor postural control and using a walking aid in the acute phase after a stroke are associated with falls after discharge from a stroke unit within 12 months after stroke onset.

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Effect of the living environment on falls among the elderly in Urmia

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Open Access Maced. J. Med. Sci 2018; 6(11): 2233-2238.

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DOI 10.3889/oamjms.2018.434 **PMID** 30559894 **PMCID** PMC6290408

Abstract



BACKGROUND: The living environment has an impact on the health of the elderly, and the safety of the house is one of the concerns of the elderly. Disregarding the safety concerns increases the falling.

AIM: This research was conducted with the aim of influencing the living environment on falls among elderly people in Urmia city.

METHODS: This is a cross-sectional (descriptive-analytic) study which 200 elderly people were selected by random cluster sampling. Data were collected by using a two-part questionnaire including demographic information, and home safety assessment checklist. Data were analysed by using chi-square test and logistic regression in SPSS v. 21 software.

RESULTS: The incidence of falling in the elderly was 30%. There was a significant statistical association with age, sex, marital status and history of chronic disease.

RESULTS of logistic regression showed non-safe stairs (OR = 1.1, $p = 0.002$), unsafe toilet/bath (OR = 1.3, $p = 0.001$), unsafe bedrooms (OR = 1.7, $p = 0.05$) unsafe living room (OR = 1.4, $p = 0.02$) increase the falls in the elderly, as well as male gender (OR = 1.14, $p < 0.001$) and living with other people (OR = 0.19, $p = 0.002$) reduce the falls in the elderly.

CONCLUSION: By identifying the risk factors of the physical space of the home, we can plan for implementing necessary interventions according to the risk factor or risk factors to prevent and reduce the falls in the elderly community.

PDF Y Endnote Y

Epidemiology of facial fractures among older adults: a retrospective analysis of a nationwide emergency department database

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(Copyright © 2018, John Wiley and Sons)

DOI 10.1111/edt.12459 **PMID** 30548143

Abstract

BACKGROUND/AIMS: The prevalence of facial fractures among older adults has increased in recent years, and nationwide studies about the epidemiological profile and outcomes of hospital-based ED visits for facial fractures among older adults are scarce. The aim of this study was to provide USA-wide data of hospital-based Emergency Department (ED) visits for facial fractures among older adults, and to investigate the outcomes associated with these visits. **MATERIAL AND METHODS:** The Nationwide Emergency Department Sample (NEDS) for the years 2008 to 2014 was used for the present study. All ED visits with a diagnosis of facial fractures in any of the diagnoses fields and only patients aged 65 years and above were included.

RESULTS: A total of 540,748 ED visits matched the criteria (62.7% were females). Public insurance - Medicare - (85.2%) was the most common payer. The three most frequent facial fractures included fractures of the nasal bones (61.3%), fractures of "other" facial bones (16.7%), and fractures of the orbital floor (15.0%). Falls were the most common causes of facial fractures (81.8%). Following ED visits, 64.1% were treated and released, and 30.6% were admitted into the hospital. The mean ED charge per visit was US\$5,507. Total ED charges across the entire United States was US\$2,518,289,555.

CONCLUSIONS: Among older adults, nasal bone fractures are the most common type of facial fracture. Facial fractures are mainly caused by falls. There was no significant trend in mortality rates over the study period, and there was a significant financial burden associated with the facial fracture-related ED visits. This article is protected by copyright. All rights reserved.

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Follow-up efficacy of physical exercise interventions on fall incidence and fall risk in healthy older adults: a systematic review and meta-analysis

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DOI 10.1186/s40798-018-0170-z **PMID** 30547249

Abstract

BACKGROUND: The risk of falling and associated injuries increases with age. Therefore, the prevention of falls is a key priority in geriatrics and is particularly based on physical exercising, aiming to improve the age-related decline in motor performance, which is crucial in response to postural threats. Although the benefits and specifications of effective exercise programs have been well documented in pre-post design studies, that is during the treatment, the definitive retention and transfer of these fall-related exercise benefits to the daily life fall risk during follow-up periods remains largely unclear. Accordingly, this meta-analysis investigates the efficacy of exercise interventions on the follow-up risk of falling.

METHODS: A systematic database search was conducted. A study was considered eligible if it examined the number of falls (fall rate) and fallers (fall risk) of healthy older adults (≥ 65 years) during a follow-up period after participating in a randomized controlled physical exercise intervention. The pooled estimates of the fall rate and fall risk ratios were calculated using a random-effects meta-analysis. Furthermore, the methodological quality and the risk of bias were assessed.

RESULTS: Twenty-six studies with 31 different intervention groups were included (4739 participants). The number of falls was significantly ($p < 0.001$) reduced by 32% (rate ratio 0.68, 95% confidence interval 0.58 to 0.80) and the number of fallers by 22% (risk ratio 0.78, 95% confidence interval 0.68 to 0.89) following exercising when compared with controls. Interventions that applied posture-challenging exercises showed the highest effects. The methodological quality score was acceptable ($73 \pm 11\%$) and risk of bias low.

CONCLUSIONS: The present review and meta-analysis provide evidence that physical exercise interventions have the potential to significantly reduce fall rate and risk in healthy older adults. Posture-challenging exercises might be particularly considered when designing fall prevention interventions.

PDF Y Endnote Y

Implementing fall prevention guidelines with vulnerable older adults: the social work role

Juckett LA, Robinson ML.

J. Gerontol. Soc. Work 2018; ePub(ePub): ePub.

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(Copyright © 2018, Informa - Taylor and Francis Group)

DOI 10.1080/01634372.2018.1555566 **PMID** 30560726

Abstract

Falls are the leading cause of injury among the older adult population, resulting in costly and devastating aftermaths. National fall prevention guidelines (FPGs) have been established to assist healthcare professionals with addressing fall risk, but little is understood about the extent to which FPGs have been implemented by social workers. Social workers, however, may be uniquely positioned to implement FPGs with older adults due to their expertise in care coordination and home- and community-based service settings. This conceptual paper addresses the timely issue of fall prevention and social workers' potential role in implementing FPGs to address fall risk.

PDF Y Endnote Y

Improvement of the performance of survival prediction in the ageing blunt trauma population: a cohort study

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PLoS One 2018; 13(12): e0209099.

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(Copyright © 2018, Public Library of Science)

DOI 10.1371/journal.pone.0209099 **PMID** 30562397

Abstract

INTRODUCTION: The overestimation of survival predictions in the ageing trauma population results in negative benchmark numbers in hospitals that mainly treat elderly patients. The aim of this study was to develop and validate a modified Trauma and Injury Severity Score (TRISS) for accurate survival prediction in the ageing blunt trauma population.

METHODS: This retrospective study was conducted with data from two Dutch Trauma regions. Missing values were imputed. New prediction models were created in the development set, including age (continuous or categorical) and Anesthesiologists Physical Status (ASA). The models were externally validated. Subsets were created based on age (≥ 75 years) and the presence of hip fracture. Model performance was assessed by proportion explained variance (Nagelkerke R^2), discrimination (Area Under the curve of the Receiver Operating Characteristic, AUROC) and visually with calibration plots. A final model was created based on both datasets.

RESULTS: No differences were found between the baseline characteristics of the development dataset ($n = 15,530$) and the validation set ($n = 15,504$). The inclusion of ASA in the prediction models showed significant improved discriminative abilities in the two subsets (e.g. AUROC of 0.52 [95% CI: 0.46, 0.58] vs. 0.74 [95% CI: 0.69, 0.78] for elderly patients with hip fracture) and an increase in the proportion explained variance ($R^2 = 0.32$ to $R^2 = 0.35$ in the total cohort). The final model showed high agreement between observed and predicted survival in the calibration plot, also

in the subsets.

CONCLUSIONS: Including ASA and age (continuous) in survival prediction is a simple adjustment of the TRISS methodology to improve survival predictions in the ageing blunt trauma population. A new model is presented, through which even patients with isolated hip fractures could be included in the evaluation of trauma care.

PDF Y Endnote Y

Interruptions, unreasonable tasks, and quality-threatening time pressure in home care: linked to attention deficits and slips, trips, and falls

Elfering A, Kottwitz MU, Häfliger E, Celik Z, Grebner S.

Saf. Health Work 2018; 9(4): 434-440.

Affiliation: University of Bern, Switzerland.

(Copyright © 2018, Occupational Safety and Health Research Institute)

DOI 10.1016/j.shaw.2018.02.001 **PMID** 30559992 **PMCID** PMC6284161

Abstract

BACKGROUND: In industrial countries, home care of community dwelling elderly people is rapidly growing. Frequent injuries in home caregivers result from slips, trips, and falls (STFs). The current study tests attentional cognitive failure to mediate the association between work stressors and STFs. **METHODS:** A sample of 125 home caregivers participated in a questionnaire study and reported work interruptions, unreasonable tasks, quality-threatening time pressure, conscientiousness, attentional cognitive failures, and STFs.

RESULTS: In structural equation modeling, the mediation model was shown to fit empirical data. Indirect paths with attentional cognitive failures as the link between work stressors and STF were all significant in bootstrapping tests. An alternative accident-prone person model, that suggests individual differences in conscientiousness to predict attentional cognitive failures that predict more frequent work stressors and STFs, showed no significant paths between work conditions and STFs.

CONCLUSION: To prevent occupational injury, work should be redesigned to reduce work interruptions, unreasonable tasks, and quality-threatening time pressure in home care.

PDF Y Endnote Y

Lower skeletal muscle mass at admission independently predicts falls and mortality three months post-discharge in hospitalised older patients

Reijnierse EM, Verlaan S, Pham VK, Lim WK, Meskers CGM, Maier AB.

J. Gerontol. A Biol. Sci. Med. Sci. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Gerontological Society of America)

DOI 10.1093/gerona/gly281 **PMID** 30551182

Abstract

BACKGROUND: Approximately 10% of older adults is annually admitted to a hospital. Hospitalisation is associated with a higher risk of falls and mortality after discharge. This study aimed to identify predictors at admission for falls and mortality three months post-discharge in hospitalised older

patients.

METHODS: The EMPOWER study is an observational, prospective longitudinal inception cohort of 378 patients aged 70 years and older who were subsequently admitted to a tertiary hospital (the Netherlands). Potential predictors for falls and mortality three months post-discharge were tested using univariate and multivariate logistic regression analyses and included the following domains: demographic (age, sex, living independently), lifestyle (alcohol, smoking), nutrition (SNAQ score), muscle mass (absolute, relative), physical function (handgrip strength, Katz ADL score), cognition (6-CIT score) and disease (medications, diseases).

RESULTS: The mean age was 79.6 years (standard deviation 6.23) and 50% were male. Within three months post-discharge, 19% reported a fall and 13% deceased. Univariate predictors for falls were higher age, lower absolute muscle mass and higher 6-CIT score. Lower absolute muscle mass independently predicted falls post-discharge (multivariate). Univariate predictors for mortality were higher age, male sex, no current alcohol use, higher SNAQ score, lower absolute and higher relative muscle mass, higher Katz ADL score and higher number of diseases. Male sex, higher SNAQ score and lower absolute muscle mass independently predicted mortality post-discharge (multivariate).

CONCLUSIONS: In hospitalised older adults, muscle mass should be measured to predict future outcome. Future intervention studies should investigate if increasing muscle mass prevent short term falls and mortality.

PDF Y Endnote Y

Manual handling in aged care: impact of environment-related interventions on mobility

Coman RL, Caponecchia C, McIntosh AS.

Saf. Health Work 2018; 9(4): 372-380.

Affiliation: Australian Collaboration for Research into Injury in Sports and its Prevention, Federation University, Ballarat, Vic., Australia.

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DOI 10.1016/j.shaw.2018.02.003 **PMID** 30559984 **PMCID** PMC6284187

Abstract

The manual handling of people (MHP) is known to be associated with high incidence of musculoskeletal disorders for aged care staff. Environment-related MHP interventions, such as appropriate seated heights to aid sit-to-stand transfers, can reduce staff injury while improving the patient's mobility. Promoting patient mobility within the manual handling interaction is an endorsed MHP risk control intervention strategy. This article provides a narrative review of the types of MHP environmental controls that can improve mobility, as well as the extent to which these environmental controls are considered in MHP risk management and assessment tools. Although a range of possible environmental interventions exist, current tools only consider these in a limited manner. Development of an assessment tool that more comprehensively covers environmental strategies in MHP risk management could help reduce staff injury and improve resident mobility through auditing existing practices and guiding the design of new and refurbished aged care facilities.

PDF Y endnote Y

Nutritional status, body mass index, and the risk of falls in community-dwelling older adults: a systematic review and meta-analysis

Trevisan C, Crippa A, Ek S, Welmer AK, Sergi G, Maggi S, Manzano E, Bea JW, Cauley JA, Decullier E, Hirani V, LaMonte MJ, Lewis CE, Schott AM, Orsini N, Rizzuto D.

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Abstract

OBJECTIVES: To evaluate the association between nutritional status, defined on the basis of a multidimensional evaluation, and body mass index (BMI) with the risk of falls and recurrent falls in community-dwelling older people.

DESIGN: Systematic literature review and meta-analysis.

SETTING AND PARTICIPANTS: Community-dwelling older adults.

MEASURES: A systematic literature review was conducted on prospective studies identified through electronic and hand searches until October 2017. A random effects meta-analysis was used to evaluate the relative risk (RR) of experiencing falls and recurrent falls (≥ 2 falls within at least 6 months) on the basis of nutritional status, defined by multidimensional scores. A random effects dose-response meta-analysis was used to evaluate the association between BMI and the risk of falls and recurrent falls.

RESULTS: People who were malnourished or those at risk for malnutrition had a pooled 45% higher risk of experiencing at least 1 fall than were those well-nourished (9510 subjects). Increased falls risk was observed in subjects malnourished versus well-nourished [RR 1.64, 95% confidence interval (CI) 1.18-2.28; 3 studies, 8379 subjects], whereas no substantial results were observed for risk of recurrent falls. A U-shaped association was detected between BMI and the risk for falls ($P < .001$), with the nadir between 24.5 and 30 (144,934 subjects). Taking a BMI of 23.5 as reference, the pooled RR of falling ranged between 1.09 (95% CI 1.04-1.15) for a BMI of 17, to 1.07 (95% CI 0.92-1.24) for a BMI of 37.5. No associations were observed between BMI and recurrent falls (120,185 subjects).

CONCLUSIONS/IMPLICATIONS: The results of our work suggest therefore that nutritional status and BMI should be evaluated when assessing the risk for falls in older age.

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Preliminary investigation of teaching older adults the tuck-and-roll strategy: can older adults learn to fall with reduced impact severity

Moon Y, Bishnoi A, Sun R, Shin JC, Sosnoff JJ.

J. Biomech. 2018; ePub(ePub): ePub.

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Abstract

Falls are common and potentially disastrous for older adults. A novel approach that could augment current fall prevention procedures is to teach older adults movement strategies to reduce the risk of injury. The purpose of the study was to determine whether older adults can learn a movement strategy ("tuck-and-roll") that reduces fall impact severity. Learning was quantified with short-term acquisition, bilateral transfer and 1-week-retention. 14 healthy older individuals participated (63.9 ± 5.6 years) in the investigation. Participants were randomly assigned into either training group ($n = 7$) or active control group ($n = 7$). All participants performed standardized sideway falls at baseline, immediately post intervention and 1-week-retention tests. During the falling assessments, kinetic and kinematic impact severity parameters were measured. The results for short-term learning revealed that the training group showed greater reduction in hip impact force (33% reduction) than the control group (16% reduction). Furthermore, there was partial bilateral transfer effect and 1-week retention observed in the training group. The observations provide preliminary evidence that teaching tuck-and-roll strategy to older adults has potential effect. The observations provide preliminary evidence that older adults might reduce impact severity utilizing tuck-and-roll strategy during unpredictably-timed sideway falls.

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Response to "A comment on postural stability improvement in older adults with high fall risk after anodal tDCS on primary motor cortex versus cerebellar stimulation"

Jaberzadeh S, Yosephi MH, Ehsani F, Zoghi M.

Brain Stimul. 2018; ePub(ePub): ePub.

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Abstract [Abstract unavailable]

PDF Y Endnote Y

Risk factors and prognostic implications of aspiration pneumonia in older hip fracture patients: a multicenter retrospective analysis

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Geriatr. Gerontol. Int. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Japan Geriatrics Society, Publisher John Wiley and Sons)

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Abstract

AIM: The present study aimed to investigate the risk factors and prognostic implications of aspiration pneumonia in older hip fracture patients.

METHODS: A total of 394 female and 125 male hip fracture patients aged ≥ 60 years who underwent surgery between 2015 and 2018 were retrospectively analyzed. To identify risk factors of aspiration pneumonia, demographic factors, the American Society of Anesthesiologists classification, past medical history, known risk factors of aspiration and factors associated with surgery were compared between the aspiration pneumonia group and the control group. Regression analysis was also carried out. To assess the prognostic implications of aspiration pneumonia, hospital stay, frequency of the intensive care unit admission and in-hospital mortality rates were compared between groups. **RESULTS:** Aspiration pneumonia was diagnosed in 8.8% of the hip fracture patients. Increased age, low body mass index, malnutrition, longer duration of surgery and delayed surgery were identified as risk factors of aspiration pneumonia. Regarding prognostic implications, hospital stay, the frequency of intensive care unit care and in-hospital mortality rates were significantly higher in the aspiration pneumonia group ($P < 0.001$, < 0.001 and 0.001 , respectively).

CONCLUSIONS: Older hip fracture patients with aspiration pneumonia showed worse prognostic outcome compared with patients without aspiration pneumonia. Longer duration of surgery and delayed surgery, as well as patient characteristics including increased age, low body mass index and malnutrition were identified as risk factors for aspiration pneumonia. Therefore, surgeons should try to reduce the operation time and the time interval between injury and surgery when treating older patients for hip fractures. *Geriatr Gerontol Int* 2018; ●●: ●●-●●.

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Similarity of repeated falls in older long-term care residents: do the circumstances of past falls predict those of future falls?

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J. Am. Med. Dir. Assoc. 2018; ePub(ePub): ePub.

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Abstract [Abstract unavailable]

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STOP-FALLING: a simple checklist tool for fall prevention in a nursing facility

Wongrakpanich S, Danji K, Lipsitz L, Berry S. *J. Am. Med. Dir. Assoc.* 2018; ePub(ePub): ePub.

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Abstract

Falls are highly prevalent and lead to major health morbidity and mortality in older adults. We developed a "STOP-FALLING" checklist as a multifactorial intervention tool kit for a single long-term care facility. The objective of this study was to determine feasibility and adherence of the checklist, and to determine whether STOP-FALLING reduces total number of falls, frequent fallers, and fall-related injuries. This is a quality improvement demonstration project comparing the effect on falls 3 months before and 3 months after introducing a STOP-FALLING checklist. All older adult patients who lived in the long-term care unit of a single facility were included. PTs, geriatricians, and registered nurses participated in the STOP-FALLING initiative. Staff were surveyed on satisfaction by 8-item questionnaires, which were obtained 3 months after checklist implementation. Data on the rate of falls, the number of recurrent fallers, the number of minor injuries, and the number of major injuries 3 months prior and 3 months after the intervention were collected by facility fall log. A total of 32 patients were screened using the STOP-FALLING checklist. Staff survey revealed a high satisfaction rate with ≤ 15 minutes to complete the checklist. Data at 3 months after initiation of the checklist revealed a reduction in the fall rates (2.80-1.65 falls per person-year), number of frequent fallers (5.00-2.30/mo after), number of falls without injuries (3.00-1.67/mo), number of minor injuries (4.00-2.67/mo), and number of major injuries (0.33-0/mo). We observed excellent staff satisfaction using the STOP-FALLING checklist. Our pilot project suggests that the intervention may decrease fall rates and other fall-related injuries.

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Symptom burden among community-dwelling older adults in the United States

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J. Am. Geriatr. Soc. 2018; ePub(ePub): ePub.

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(Copyright © 2018, John Wiley and Sons)

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Abstract

OBJECTIVES: To determine the prevalence and impact of common co-occurring symptoms among community-dwelling older adults in the United States.

DESIGN: The National Health and Aging Trends Study is a nationally representative, prospective study with annual data collection between 2011 and 2017.

SETTING: Community-based, in-person interviews (survey response rates, 71%-96%).

PARTICIPANTS: A total of 7,609 community-dwelling Medicare beneficiaries, 65 years or older.

MEASUREMENTS: Symptoms assessed at baseline include pain, fatigue, breathing difficulty, sleeping difficulty, depressed mood, and anxiety. Total symptom count ranged from zero to six. Several outcomes were examined, including grip strength, gait speed, and overall lower-extremity function as well as incidence of recurrent falls (two or more per year), hospitalization, disability, nursing



home admission, and mortality.

RESULTS: Prevalence of zero, one, two, three, and four or more symptoms was 25.0%, 26.6%, 20.7%, 14.0%, and 13.6%, respectively. Symptom count increased with advancing age and was higher in women than in men. Pain and fatigue were the most common co-occurring symptoms. Higher symptom count was associated with decreased physical capacity. For example, participants with one, two, three, and four or more symptoms had gait speeds that were 0.04, 0.06, 0.09, and 0.13 m/s slower, respectively, than those with no symptoms, adjusting for specific diseases, total number of diseases, and other potential confounders ($P < .001$). The risk of several adverse outcomes also increased with greater symptom count. For example, compared with those with no symptoms, the adjusted risk ratios for recurrent falls were 1.48 (95% confidence interval [CI] = 1.30-1.70), 1.54 (95% CI = 1.32-1.80), 1.90 (95% CI = 1.55-2.32), and 2.38 (95% CI = 2.00-2.83) for older adults with one, two, three, and four or more symptoms, respectively.

CONCLUSIONS: Symptoms frequently co-occur among community-dwelling older adults and are strongly associated with increased risk of a range of adverse outcomes. Symptoms represent a potential treatment target for improving outcomes and should be systematically captured in health records.

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The impact of community-based interventions for the older population: a quasi-experimental study of a hip-fracture prevention program in Norway

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BMC Geriatr. 2018; 18(1): e311.

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(Copyright © 2018, Holtzbrinck Springer Nature Publishing Group)

DOI 10.1186/s12877-018-1004-z **PMID** 30545319

Abstract

BACKGROUND: Hip fractures among older adults are a major public health problem in many countries. Hip fractures are associated with expensive health care treatments, and serious adverse effects on patients' health and quality-of-life. In this paper, we estimate the effect of a community-based hip fracture prevention program that was initiated in 16 Norwegian municipalities in 2007. Specifically, the participating municipalities implemented one or more of the following interventions: exercise programs for older adults, information and education campaigns to communicate how to effectively reduce falls to care workers and older adults, and preventive home safety assessment and modification help services.

METHODS: We used a difference-in-difference design, and identified control municipalities by matching on pre-intervention trends in the outcome. The outcome measure was the incidence of hip-fractures among older adults (≥ 65 years).

RESULTS: We found no statistically significant effects of the implemented program on the incidence of hip fractures, on average, in older subgroups (≥ 80 years) or in municipality-specific analyses.



CONCLUSIONS: It is unclear whether the interventions managed to achieve a change in hip fracture rates at the population level.

PDF Y Endnote Y

The neural correlates of discrete gait characteristics in ageing: a structured review

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Neurosci. Biobehav. Rev. 2018; ePub(ePub): ePub.

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(Copyright © 2018, Elsevier Publishing)

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Abstract

Gait is complex, described by diverse characteristics underpinned by widespread central nervous system networks including motor and cognitive functions. Despite this, neural substrates of discrete gait characteristics are poorly understood, limiting understanding of gait impairment in ageing and disease. This structured review aims to map gait characteristics, defined from a pre-specified model reflecting independent gait domains, to brain imaging parameters in older adults. Fifty-two studies of 38,029 yielded were reviewed. Studies showed inconsistent approaches when mapping gait assessment to neural substrates, limiting conclusions. Gait impairments typically associated with brain deterioration, specifically grey matter atrophy and white matter integrity loss. Gait velocity, a global measure of gait control, was most frequently associated with these imaging markers within frontal and basal ganglia regions, and its decline predicted from white matter volume and integrity measurements. Fewer studies assessed additional gait measures or functional imaging parameters. Future studies mapping regional neuroanatomical and functional correlates of gait are needed, including those which take a multi-process network perspective to better understand mobility in health and disease.

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The relationship between the houseboundness and frailty of community-dwelling elderly persons

Katsura T, Abe N, Komata M, Ogura M, Ishikawa N, Hoshino A, Shizawa M, Usui K, Yokoyama E, Hara M.

J. Rural Med. 2018; 13(2): 141-150.

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DOI 10.2185/jrm.2972 **MID** 30546803 **PMCID** PMC6288724

Abstract

This study aimed to verify whether the incidence of frailty in elderly individuals is higher among those who are housebound than those who are not. This study found no correlation between elderly people's houseboundness and physical, mental, social, and overall frailty. However, the Tilburg

Frailty Indicator (TFI) frailty score and grip strength value were higher in non-housebound elderly persons than in housebound elderly ones. This suggests that being housebound may lead to frailty. On the other hand, it is thought that individual interaction with family and friends, and lack of anxiety about falls correlates with the prevention of frailty in housebound elderly persons. The results of the study also suggest that the basic checklist may be effective for ascertaining the actual situation of housebound elderly people who may be manifesting frailty.

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Utility of geriatric assessment in the projection of early mortality following hip fracture in the elderly patients

Palmer A, Taitsman LA, Reed MJ, Nair BG, Bentov I.

Geriatr Orthop Surg Rehabil 2018; 9: e2151459318813976.

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(Copyright © 2018, Sage Publications)

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Abstract

Hip fractures result in significant morbidity and mortality in elders. Indicators of frailty are associated with poor outcomes. Commonly used frailty tools rely on motor skills that cannot be performed by this population. We determined the association between the Charlson Comorbidity Score (CCS), intraoperative hypotension (IOH), and a geriatric medicine consult index (GCI) with short-term mortality in hip fracture patients. A retrospective cohort study was conducted at a single institution over a 2-year period. Patients aged 65 years and older who sustained a hip fracture following a low-energy mechanism were identified using billing records and our orthopedic fracture registry. Medical records were reviewed to collect demographic data, fracture classification and operative records, calculation of CCS, intraoperative details including hypotension, and assessments recorded in the geriatric consult notes. The GCI was calculated using 30 dichotomous variables contained within the geriatric consult note. The index, ranging from 0 to 1, included markers for physical and cognitive function, as well as medications. A higher GCI score indicated more markers for frailty. One hundred eight patients met inclusion criteria. Sixty-four (59%) were females and the average age was 77.3 years. Thirty-five (32%) patients sustained femoral neck fractures, and 73 (68%) patients sustained inter-/pertrochanteric hip fractures. The 30-day mortality was 6%; the 90-day mortality was 13%. The mean GCI was 0.30 in the 30-day survivor group as compared to 0.52 in those who died. The mean GCI was 0.28 in patients who were alive at 90 days as compared to 0.46 in those who died. In contrast, the CCS and IOH were not associated with 30- or 90-day mortality. In our older hip fracture patients, an index calculated from information routinely obtained in the geriatric consult evaluation was associated with 30- and 90-day mortality, whereas the CCS and measures of IOH were not.

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Willingness to change medications linked to increased fall risk: a comparison between age groups

Haddad YK, Karani MV, Bergen G, Marcum ZA.

J. Am. Geriatr. Soc. 2018; ePub(ePub): ePub.

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(Copyright © 2018, John Wiley and Sons)

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Abstract

OBJECTIVE: To describe and compare two age groups' knowledge of medications linked to falls and willingness to change these medications to reduce their fall risk.

METHOD: We analyzed data from community-dwelling adults age 55 and older (n = 1812): 855 adults aged 55 to 64 years and 957 older adults (65 and older) who participated in the 2016 summer wave of the ConsumerStyles survey, an annual Web-based survey. The data are weighted to match the US Current Population Survey proportions on nine US Census Bureau demographic characteristics.

MEASUREMENTS: Survey respondents were asked about medication use, knowledge of side effects, their willingness to change their medications to reduce fall risk, communication in the previous year about fall risk with their healthcare provider, and their comfort in discussing fall risk with their healthcare provider. All data were weighted to match the 2016 population estimates.

RESULTS: About one-fifth of all respondents reported using at least one class of medication that increases fall risk. Older adults were less likely to report using medications for mood or sadness, less likely to report knowing the side effects of pain medications, and more willing to change their sleep medications compared with their younger counterparts. Among all respondents using these medication classes, less than one-third knew the potential fall-related side effects. However, most of them expressed willingness to change their medication if advised by their healthcare provider.

CONCLUSION: Most older adults were unaware of potential fall risks associated with medications prescribed to address pain, difficulty sleeping, mood or sadness, and anxiety- or nervousness-related health issues. However, most were willing to change their medication if recommended by a healthcare provider.

Published 2018 This article is a U.S. Government work and is in the public domain in the USA.

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Evaluation of functional ankle instability assessed by an instrumented wobble board

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Phys. Ther. Sport 2018; 35: 133-138.

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(Copyright © 2018, Elsevier Publishing)

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Abstract

OBJECTIVES: Ankle sprains often lead to a history of recurrent injuries and functional joint instability. This study evaluated a new method for assessing functional impairment in patients with chronic ankle instability.

DESIGN: Case-control study for construct validation purpose.



SETTING: The participants were tested during one-leg standing for 20 s on an instrumented wobble board and on a balance platform.

PARTICIPANTS: Twenty-five young people with previous ankle sprain and an instability score >11 in the "Identification of Functional Ankle Instability questionnaire" and an age-matched control group of 25 healthy individuals.

MAIN OUTCOME MEASURES: Wobble board variation of tilt angle measured by two accelerometers placed horizontally in the board.

RESULTS: The variation in angular tilt of the wobble board in the medio-lateral direction (standard deviation of tilt angle) was higher in the group with perceived ankle instability than in the control group: 1.5 (0.7) versus 1.1 (0.3). ICC for intra-tester reliability: 0.87 and correlation with COP area measures from the stable balance platform: 0.64.

CONCLUSIONS: People with functional ankle instability display poorer postural stability in the medio-lateral direction when challenged on an unstable surface. The instrumented wobble board may serve as a relevant tool in the clinical evaluation of functional ankle stability.

PDF Y Endnote Y

Evaluation of postural stability based on a force plate and inertial sensor during static balance measurements

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J. Physiol. Anthropol. 2018; 37(1): e27.

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(Copyright © 2018, Japan Society of Physiological Anthropology)

DOI 10.1186/s40101-018-0187-5 **PMID** 30545421

Abstract

BACKGROUND: Previous research on balance mostly focused on the assessment, training, and improvements of balance through interventions. We investigated tools commonly used to study static balance. Differences in postural stability were analyzed using multiscale entropy (MSE) and feature analysis.

METHODS: A force plate and inertial sensor were used to collect acceleration and center-of-pressure (COP) nonlinear signals. MSE was also used to detect fractal correlations and assess the complexity of univariate data complexity. Fifteen healthy subjects participated in the experiments. Each stood on a force plate and wore a sensor while attempting to maintain postural stability for 30 s in four randomized experiments to evaluate their static balance via a copositive experiment with eyes open/closed and with standing on one foot or both feet. A Wilcoxon-signed rank test was used to confirm that the conditions were significant. Considering the effect of the assessment tools, the influence of the visual and lower limb systems on postural stability was assessed and the results from the inertial sensor and force plate experiments were compared.

RESULTS: Force plate usage provided more accurate readings when completing static balance tasks based on the visual system, whereas an inertial sensor was preferred for lower-limb tasks. Further, the eyes-open-standing-on-one-foot case involved the highest complexity at the X, Y, and Z axes for acceleration and at the ML axis for COP compared with other conditions, from which the axial

directions can be identified.

CONCLUSIONS: The findings suggested investigation of different evaluation tool choices that can be easily adapted to suit different needs. The results for the complexity index and traditional balance indicators were comparable in their implications on different conditions. We used MSE to determine the equipment that measures the postural stability performance. We attempted to generalize the applications of complexity index to tasks and training characteristics and explore different tools to obtain different results. **TRIAL REGISTRATION:** This study was approved by the Research Ethics Committee of National Taiwan University and classified as expedited on August 24, 2017. The committee is organized under and operates in accordance with Social and Behavioral Research Ethical Principles and Regulations of National Taiwan University and government laws and regulations.

PDF Y Endnote Y

Evaluation of pregabalin-induced adverse events related to falls using the FDA adverse event reporting system and Japanese Adverse Drug Event Report databases

Mukai R, Hasegawa S, Umetsu R, Nakao S, Shimada K, Uranishi H, Masuta M, Suzuki H, Nishibata Y, Nakamura M.

J. Clin. Pharm. Ther. 2018; ePub(ePub): ePub.

Affiliation: Laboratory of Drug Informatics, Gifu Pharmaceutical University, Gifu, Japan.

(Copyright © 2018, John Wiley and Sons)

DOI 10.1111/jcpt.12790 **PMID** 30569470

Abstract

WHAT IS KNOWN AND OBJECTIVE: Pregabalin is used for neuropathic and postherpetic pain and generalized anxiety. The aim of this study was to obtain the onset profiles of adverse events (AE) related to falls (AEFs) such as "somnolence," "dizziness," "loss of consciousness" and "fall" onset and several clinical factor combinations such as age and administered dose, using spontaneous reporting system (SRS) analysis such as the US Food and Drug Administration Adverse Event Reporting System (FAERS) database and the Japanese Adverse Drug Event Report (JADER) database.

METHODS: We used the reporting odds ratio (ROR) to analyse the association between pregabalin and AEFs. Additionally, we used the time-to-onset analysis.

RESULTS AND DISCUSSION: The crude RORs of AEFs such as somnolence and dizziness were higher than one for both the databases. The adjusted RORs for AEFs in the ≥ 60 years age group compared to those in the < 60 years age group for the FAERS and JADER databases were 1.46 (95% CI = 1.39-1.53; $P < 0.0001$) and 2.58 (95% CI = 2.06-3.27; $P < 0.0001$), respectively. In the JADER database, the median and quartile range for AEFs with pregabalin, at ≤ 75 and ≥ 100 mg/d, were 2.0 (0.0-5.0) and 2.0 (1.0-4.3) days, respectively. Additionally, 57.2% of AEFs (four preferred terms) were observed within 2 days after administration. **WHAT IS NEW AND CONCLUSIONS:** This study is the first to evaluate the relationship between pregabalin and AEFs using the SRS analysis strategy. The risk of AEFs in the ≥ 60 years age group might increase compared to that in the < 60 years age group. AEFs occurred almost within 1 week after pregabalin administration, and the median for AEF onset was 2 days. Our results show that patients should be closely monitored for AEFs for 1 week from the start of pregabalin administration.

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PDF Y Endnote Y

Fall prevalence and contributors to the likelihood of falling in persons with upper limb loss

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Phys. Ther. 2018; ePub(ePub): ePub.

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(Copyright © 2018, American Physical Therapy Association)

DOI 10.1093/ptj/pzy156 **PMID** 30561742

Abstract

BACKGROUND: Arms are important for locomotor stability and preventing falls by controlling whole-body angular momentum, redirecting the body's center-of-mass, and providing support to arrest descent. Hence, upper limb loss (ULL) may increase fall risk. Unfortunately, prevalence of falls and factors that influence fall risk have not previously been reported for people with ULL.

OBJECTIVE: This study quantified fall prevalence in persons with ULL at or proximal to the wrist and identified clinical factors that contributed to the likelihood of falling.

DESIGN: This was a cross-sectional study.

METHODS: Factors including body and health characteristics, activity level, fall history, prosthesis use, and balance confidence were collected on persons with ULL proximal to the wrist using an online survey. Logistic regression analyses assessed the contribution of these factors to the classification of fallers (≥ 2 falls in previous year) and non-fallers.

RESULTS: A percentage (28.6%) of participants ($n = 105$) reported experiencing two or more falls in the past year. The regression model ($R^2 = 0.473$) correctly classified 84.5% of cases and indicated that increased likelihood of falling was significantly influenced by lower balance confidence, use of upper limb prostheses, and lower physical capabilities. **LIMITATIONS:** Data were collected online from a convenience sample and fall classification was based on retrospective data.

CONCLUSIONS: Falls in persons with ULL are prevalent, suggesting that clinicians should use screening methods to identify at-risk individuals. Balance confidence, use of upper limb prostheses, and perceived physical capabilities may be useful screening metrics. Research is warranted to better understand the factors that underlie fall risk in persons with ULL and efficacy of therapeutic interventions capable of mitigating fall risk.

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