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A 12-year retrospective analysis of differences between elderly and oldest old patients referred to the emergency department of a large tertiary hospital

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Abstract

OBJECTIVES: Globally, the average age of the population is increasing. Patients aged >65 years attending hospital emergency departments (EDs) differ from younger patients; in particular, they often present with multiple comorbidities. Our retrospective study evaluates the number of attendances at our ED by elderly patients in the 12 years from January 2005 to December 2017. Our first aim was to evaluate differences presented by elderly patients regarding symptoms, clinical features, color code (i.e. priority assigned to the case, where red is highest and yellow is medium), waiting time and outcome.

PATIENTS AND METHODS: We analyzed data from 201,580 patients aged >65, divided into two groups: 65-84 years and >85 years. Clinical and demographic data were collected from the computerized clinical record (GIPSE®).

RESULTS: 201,580 patients fulfilled the inclusion criteria, of whom 93,262 (46.3%) were male. There were 162,373 patients aged 65-84, and 39,207 aged >85. Patients aged >85 presented more complex cases, and were admitted more frequently with a red color code and were more frequently hospitalized. Larger proportions of this group had dementia, and attended the ED for trauma or gastrointestinal bleeding. The group aged 65-84 were admitted more frequently with a yellow color code and then discharged. They typically attended the ED for chest and abdominal pain.

CONCLUSION: There is an increase in the request for health care especially in an emergency setting. The hospitalization of elderly patients is associated with a deterioration in motor skills and quality of life. Being able to reduce hospitalization in the elderly means avoiding disruption to the home care of people with dementia, and reducing both the risk of falls and hospital infections. In Italy, a program (as already experimented with in the USA) dedicated to the elderly who attend hospital EDs is desirable.

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PDF Y Endnote Y

A combined physical activity and fall prevention intervention improved mobility-related goal attainment but not physical activity in older adults: a randomised trial

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Abstract

QUESTIONS: In people aged ≥ 60 years, does a combined physical activity and fall prevention intervention affect physical activity and mobility-related goal attainment? Does the combined intervention also improve fall rates, daily steps, the proportion of people meeting the physical activity guidelines, quality of life, mood, fear of falling, and mobility limitation?

DESIGN: Randomised trial with concealed allocation, intention-to-treat analysis and assessor blinding.

PARTICIPANTS: One hundred and thirty-one people living in the community and aged ≥ 60 years.

INTERVENTIONS: The experimental group received one physiotherapist visit, fortnightly telephone-based health coaching, a pedometer, tailored fall prevention advice, and a fall prevention brochure. The control group received the same fall prevention brochure.

OUTCOME MEASURES: Primary outcomes were mobility goal attainment (Goal Attainment Scale) and objectively measured physical activity (accelerometer counts per minute) at 6 and 12 months. Secondary outcomes were falls, other physical activity measures, quality of life, fear of falling, mood, and mobility.

RESULTS: Participants had a mean age of 71 years (SD 6.5) and 31 (24%) had fallen in the past year. The experimental group reported significantly better mobility goal attainment at 6 months compared to controls (OR 2.0, 95% CI 1.1 to 3.7) but this was not maintained at 12 months (OR 1.1, 95% CI 0.6 to 2.1). Physical activity counts were not significantly different between groups at 6 months (MD 13 counts/minute, 95% CI -98 to 124) or 12 months (MD 56 counts/minute, 95% CI -14 to 125). There were no significant between-group differences in the secondary outcomes.

CONCLUSION: A combined physical activity and fall prevention intervention was associated with significantly higher mobility goal attainment at 6 months. There was no significant impact on physical activity but future investigation in a larger trial is warranted. **TRIAL REGISTRATION:**

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Analysis of fall-related adverse events among older adults using the Japanese Adverse Drug Event Report (JADER) database

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DOI 10.1186/s40780-018-0129-8 PMID 30574336 PMCID PMC6296112

Abstract

BACKGROUND: Falls are a common but serious problem in older adults, and may lead to fractures and bleeding. As many factors, such as medication, aging, and comorbid diseases may



simultaneously affect fall-related adverse events (AEs) in older adults, we evaluated the association between fall-related AEs and the use of medication, aging, and comorbid diseases using the Japanese Adverse Drug Event Report (JADER) database.

METHODS: We analyzed reports of fall-related AEs associated with α -blockers, diuretics, calcium channel blockers, central nervous system (CNS)-active drugs (opioids, benzodiazepines, hypnotics and sedatives, non-selective monoamine reuptake inhibitors, and selective serotonin reuptake inhibitors (SSRI)) in the JADER database using the reporting odds ratio (ROR). For the definition of falls, we used the Preferred Terms of The Medical Dictionary for Regulatory Activities (MedDRA). We used the association rule mining technique to discover undetected associations, such as potential risk factors.

RESULTS: The JADER database comprised 430,587 reports between April 2004 and November 2016. The RORs (95% CI) of α -blockers, diuretics, calcium channel blockers, opioids, benzodiazepines, hypnotics and sedatives, non-selective monoamine reuptake inhibitors, and SSRIs were 1.63 (1.27-2.09), 0.74 (0.63-0.86), 1.26 (1.15-1.38), 0.93 (0.80-1.07), 1.83 (1.68-2.01), 1.55 (1.12-2.14), 2.31 (1.82-2.95), and 2.86 (2.49-3.29), respectively. From the *lift* value in the association rule mining, the number of administered CNS-active drugs and patient age were associated with fall-related AEs. Furthermore, the scores of *lift* for patients with herpes zoster administered calcium channel blockers or benzodiazepines and patients with dementia administered benzodiazepines were high.

CONCLUSION: Our results suggest that the number of administered CNS-active drugs and patient age are both associated with fall-related AEs. We recommend that patients with herpes zoster treated with calcium channel blockers and benzodiazepines be closely monitored for fall-related AEs.

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Decreasing fear of falling in chronic stroke survivors through cognitive behavior therapy and task-oriented training

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Stroke 2018; ePub(ePub): ePub.

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DOI 10.1161/STROKEAHA.118.022406 **PMID** 30580723

Abstract

BACKGROUND AND PURPOSE: Research has shown that balance training is effective for reducing the fear of falling in individuals with a history of stroke. In this study, we evaluated (1) whether cognitive behavior therapy could augment the beneficial effects of task-oriented balance training (TOBT) in reducing the fear of falling in chronic stroke survivors and (2) whether it could, in turn, reduce fear-avoidance behavior and improve related health outcomes.

METHODS: Eighty-nine cognitively intact subjects with mildly impaired balance ability were randomized into the following 2 groups that underwent 90-minute interventions 2 days per week for 8 weeks: (1) cognitive behavior therapy + TOBT or (2) general health education + TOBT (control). The primary outcome was the fear of falling, and the secondary outcomes were fear-avoidance



behavior, balance, fall risk, independent daily living, community integration, and health-related quality of life. The outcomes were assessed at baseline, after 4 and 8 weeks of intervention, and 3 and 12 months after completing the intervention.

RESULTS: Eighty-two subjects completed the intervention and follow-up assessments. From postintervention to 12 months after completing the intervention, the cognitive behavior therapy + TOBT participants reported greater reduction in the fear of falling and fear-avoidance behavior and greater improvements in balance and independent daily living than the general health education + TOBT participants.

CONCLUSIONS: Cognitive behavior therapy should be considered as an adjuvant therapy to standard physiotherapy for cognitively intact individuals with a history of stroke. Clinical Trial Registration-URL: <http://clinicaltrials.gov>. Unique identifier: NCT02937532.

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Factors associated with self-reported falls, balance or walking difficulty in older survivors of breast, colorectal, lung, or prostate cancer: results from Surveillance, Epidemiology, and End Results-Medicare Health Outcomes Survey linkage

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Abstract

BACKGROUND: Cancer and its treatment affect body systems that are important in preventing falls and controlling balance/walking. This study examined factors associated with self-reported falls and balance/walking difficulty in the past 12 months in older survivors of four major cancers.

METHODS: This was a cross-sectional study analyzing population-based data from Surveillance, Epidemiology, and End Results-Medicare Health Outcomes Survey (SEER-MHOS). Data from cohorts 9 to 14 (January 2006 to December 2013) were extracted. Inclusion criteria were: age ≥ 65 years at cancer diagnosis, first MHOS completed during years 1-5 post-cancer diagnosis, first primary breast (n = 2725), colorectal (n = 1646), lung (n = 752), and prostate (n = 4245) cancer, and availability of cancer staging information. Primary outcomes were self-reported falls and balance/walking difficulty in the past 12 months. Multivariable logistic regression was constructed for each cancer type to examine independent factors associated with falls and balance/walking difficulty.

RESULTS: In all cancer types, advancing age at cancer diagnosis and dependence in activities of daily living were significant independent factors associated with increased odds of reporting falls and balance/walking difficulty in the past 12 months. Additionally, depression was independently associated with falls and sensory impairment in feet was independently linked to balance/walking difficulty in all cancer types. Other independent factors of falls and balance/walking difficulty varied across cancer types. In breast cancer only, localized or regional cancer stage was significantly associated with increased odds of reporting falls and balance/walking difficulty, whereas treatment with radiation decreased the odds of falling. No association between falls and balance/walking



difficulty with time since cancer diagnosis, cancer stage, or cancer treatment was found in colorectal, lung, and prostate cancer.

CONCLUSION: There exists some heterogeneity in factors associated with self-reported falls and balance/walking difficulty between different cancer types. Future research is necessary to ascertain factors predictive of falls and balance/walking difficulty in older cancer survivors, particularly factors related to cancer diagnosis and treatment.

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Injury patterns and incidence of intra-abdominal injuries in elderly ground level fall patients: is the PAN-SCAN warranted?

Gartin CG, Reyes J, Helmer SD, Haan JM.

Am. J. Surg. 2018; ePub(ePub): ePub.

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Abstract

BACKGROUND: This study aimed to determine the incidence of intra-abdominal injuries in elderly patients after a ground-level fall.

METHODS: A 6-year retrospective review was conducted on patients 65 years of age or older involved in a fall from standing and evaluated at a level 1 trauma center. Each patient presented with a pelvic, thoracolumbar, and/or lower rib fracture. Data collection included demographics, injury characteristics, FAST exam results, CT imaging results, and hospitalization outcomes.

RESULTS: A total of 324 patients met study inclusion criteria. The majority of patients were white (95.1%) females (65.4%) with an average age of 82.0 ± 7.3 years. Only 22 patients (6.8%) reported abdominal pain, although an abdominal CT was performed in 91 patients (28.1%). Only 1 patient (0.3%) was found to have an intra-abdominal injury when no abdominal pain was reported and the FAST exam was negative. This injury was not clinically significant enough to warrant surgical intervention.

CONCLUSION: Elderly patients who suffer a ground-level fall do not benefit from PAN-SCAN, even when presenting with rib, thoracolumbar, and/or pelvic fractures.

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Major trauma in the elderly: frailty decline and patient experience after injury

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Trauma (Sage) 2019; 21(1): 21-26.

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Abstract



INTRODUCTION: The prevalence of major trauma in the elderly is increasing with ageing western societies. Frailty is now a well-recognised predictor of poor outcome after injury; however, few studies have focused on the progression of frailty and patients' perceptions of their injuries after discharge.

AIM: We hypothesised that the number of elderly patients that survive major trauma is low and, of those that do, frailty post injury worsens with overall negative views about quality of life. To investigate this, we examined mortality, frailty and patient experience for elderly major trauma admissions to a level 1 trauma centre at one year after admission.

METHOD: All consecutive patients > 75 with an injury severity score of > 15 were included in the study. Patients were invited to participate in a structured telephone interview to assess change in frailty status as well as assess patient experience after injury.

RESULTS: A total of 79 patients met inclusion criteria; 34 patients had died and 17 were uncontactable; 88% had become more frail ($p < 0.05$), and more than half commented positively on their overall quality of life following injury.

CONCLUSIONS: These findings highlight the elevated mortality in elderly major trauma patients, but also indicate that preconceived opinions on quality of life, post injury, might not be appropriate.

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Orthostatic hypotension and falls in older adults: a systematic review and meta-analysis

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

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Abstract

OBJECTIVES: Orthostatic hypotension is a potential risk factor for falls in older adults, but existing evidence on this relationship is inconclusive. This study addresses the association between orthostatic hypotension and falls.

DESIGN: Systematic review and meta-analysis of the cross-sectional and longitudinal studies assessing the association between orthostatic hypotension and falls, as preregistered in the PROSPERO database (CRD42017060134).

SETTING AND PARTICIPANTS: A literature search was performed on February 20, 2017, in MEDLINE (from 1946), PubMed (from 1966), and EMBASE (from 1947) using the terms orthostatic hypotension, postural hypotension, and falls. References of included studies were screened for other eligible studies. Study selection was performed independently by 2 reviewers using the following inclusion criteria: published in English; mean/median age of the population ≥ 65 years; blood pressure measurement before and after postural change; and assessment of the association of orthostatic hypotension with falls. The following studies were excluded: conference abstracts, case reports, reviews, and editorials. Data extraction was performed independently by 2 reviewers.

MEASURES: Unadjusted odds ratios of the association between orthostatic hypotension and falls were used for pooling using a random effects model. Studies were rated as high, moderate, or low quality using the Newcastle-Ottawa Scale.

RESULTS: Out of 5646 studies, 63 studies (51,800 individuals) were included in the systematic review and 50 studies (49,164 individuals) in the meta-analysis. Out of 63 studies, 39 were cross-sectional and 24 were longitudinal. Orthostatic hypotension was positively associated with falls (odds ratio 1.73, 95% confidence interval 1.50-1.99). The result was independent of study population, study design, study quality, orthostatic hypotension definition, and blood pressure measurement method.

CONCLUSIONS AND IMPLICATIONS: Orthostatic hypotension is significantly positively associated with falls in older adults, underpinning the clinical relevance to test for an orthostatic blood pressure drop and highlighting the need to investigate orthostatic hypotension treatment to potentially reduce falls.

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Physical frailty and gait speed in community elderly: a systematic review

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Rev. Esc. Enferm. USP 2018; 52: e03392.

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(Copyright © 2018, Universidade de Sao Paulo)

DOI 10.1590/S1980-220X2017028703392 **PMID**30570081

Abstract

OBJECTIVE: To identify the outcomes of studies on gait speed and its use as a marker of physical frailty in community elderly.

METHOD: Systematic review of the literature performed in the following databases: LILACS, SciELO, MEDLINE/PubMed, ScienceDirect, Scopus and ProQuest. The studies were evaluated by STROBE statement, and the PRISMA recommendations were adopted.

RESULTS: There were 6,303 studies, and 49 of them met the inclusion criteria. Of the total number of studies, 91.8% described the way of measuring gait speed. Of these, 28.6% used the distance of 4.6 meters, and 34.7% adopted values below 20% as cutoff points for reduced gait speed, procedures in accordance with the frailty phenotype. Regarding the outcomes, in 30.6% of studies, there was an association between gait speed and variables of disability, frailty, sedentary lifestyle, falls, muscular weakness, diseases, body fat, cognitive impairment, mortality, stress, lower life satisfaction, lower quality of life, napping duration, and poor performance in quantitative parameters of gait in community elderly.

CONCLUSION: The results reinforce the association between gait speed, physical frailty and health indicator variables in community elderly.

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Reconstruction of body motion during self-reported losses of balance in community-dwelling older adults

Ojeda LV, Adamczyk PG, Rebula JR, Nyquist LV, Strasburg DM, Alexander NB.

Med. Eng. Phys. 2018; ePub(ePub): ePub.

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Abstract

Older adults experience slips, trips, stumbles, and other losses of balance (LOBs). LOBs are more common than falls and are closely linked to falls and fall-injuries. Data about real-world LOBs is limited, particularly information quantifying the prevalence, frequency, and intrinsic and extrinsic circumstances in which they occur. This paper describes a new method to identify and analyze LOBs through long-term recording of community-dwelling older adults. The approach uses wearable inertial measurement units (IMUs) on the feet, trunk and one wrist, together with a voice recorder for immediate, time-stamped self-reporting of the type, context and description of LOBs. Following identification of an LOB in the voice recording, concurrent IMU data is used to estimate foot paths and body motions, and to create body animations to analyze the event. In this pilot study, three older adults performed a long-term monitoring study, with four weeks recording LOBs by voice and two concurrent weeks wearing IMUs. This report presents a series of LOB cases to illustrate the proposed method, and how it can contribute to interpretation of the causes and contexts of the LOBs. The context and timing information from the voice records was critical to the process of finding and analyzing LOB events within the voluminous sensor data record, and included much greater detail, specificity, and nuance than past diary or smartphone reporting.

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Relationship between the occurrence of falls by season and physical functions of community-dwelling old-old people living in cold, snowy areas

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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)

DOI 10.1111/ggi.13566 **PMID** 30565831

Abstract

AIM: To investigate the functional characteristics of older adults who experienced a fall in the winter season and other seasons.

METHODS: Participants were 403 older adults enrolled in the project "Population-Based and Inspiring Potential Activity for Old-old Inhabitants," and were living in cold, snowy regions in Japan. They were aged ≥ 75 years, and 41.9% (n = 169) were men. Sociodemographic characteristics, and

physical, psycho-cognitive and social factors were surveyed. By experiences of falls, they were divided into three groups: the non-fall group, the fall in non-winter group and the fall in winter group. Each factor was compared with a χ^2 -test, Student's t-test and Mann-Whitney U-test. Logistic regression analysis was carried out. spss version 25 was used for the statistical analysis. The level of significance was set at 5%.

RESULTS: No differences were confirmed between the non-fall and fall in winter groups. In contrast, the maximum walking speed in the fall in non-winter group was significantly slower than the non-fall group, even with adjustment by variables, such as age, sex and self-efficacy.

CONCLUSIONS: When considering intervention methods for health promotion, it is necessary to consider not only the presence or absence of falls, but also the seasons of falls. *Geriatr Gerontol Int* 2018; ••: ••-••.

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Relationship of incident falls with balance deficits and body composition in male and female community-dwelling elders

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J. Nutr. Health Aging 2019; 23(1): 9-13.

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Abstract

OBJECTIVE: Sarcopenia and obesity are reported risk factors for falls, although the data are not consistent and most studies do not make sex comparisons. We investigated whether falls were associated with balance, gait, and body composition, and whether these relationships are sex-specific.

DESIGN: Secondary analysis of 4-year follow-up data from of the New Mexico Aging Process Study.

SETTING: Albuquerque, New Mexico.

PARTICIPANTS: 307 participants (M, n=122, 75.8 yr. SD5.5; F, n=183, 74.6yr SD6.1).

MEASUREMENTS: Gait and balance were assessed annually using the Tinetti test. Lean body mass (LBM), appendicular skeletal muscle mass (ASM), fat free mass (FFM), total fat mass (FM) were assessed annually by DXA. Falls were assessed using bimonthly falls calendars. Hazard ratios (HR) for 2-point worsening in gait and balance score and falls were calculated by Cox proportional hazard for men and women.

RESULTS: Baseline balance deficits, and not body composition, represented the strongest predictor of falls. For the total balance score, the variables with significant sex interactions were ASM (Male-HR 1.02 95%CI 0.60-1.73; Female-HR 1.92 95%CI 1.05-3.52, p=0.03) and FFM (Male-HR 1.04 95%CI 0.64-1.70; Female-HR 1.91 95%CI 1.12-3.24, p=0.04), after adjustment for age, sarcopenia and physical activity. The body composition relationship with balance deficits was U-shaped with the strongest predictors being low LBM in males and high FM in females.

CONCLUSIONS: Specific body composition components and balance deficits are risk factors for falls



following sex-specific patterns. Sex differences need to be explored and considered in interventions for worsening balance and falls prevention.

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The relationship between sleep duration, falls and muscle mass: a cohort study in Chinese, elderly population

Fu L, Yu X, Zhang W, Han P, Li K, Ma Y, Jia L, Yu H, Chen X, Hou L, Wang L, Guo Q.

Rejuvenation Res. 2018; ePub(ePub): ePub.

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DOI 10.1089/rej.2018.2102 **PMID** 30565504

Abstract

OBJECTIVE: Epidemiological studies report that more than half of people over the age of 65 years suffer from variable sleep problems. In this study, we conducted a cohort study to investigate the relation between sleep duration on muscle mass and function within a Chinese, community-dwelling elderly population.

METHOD: Our study population consisted of residents living in the township central hospital of suburban Tianjin, China. We measured muscle strength and walk speed. We divided sleep duration into the following four groups: <7h, 7-8h, >8-9h, >9h.

RESULTS: A total of 902 participants completed the 3-year follow up. We observed a U-shaped relationship between sleep duration and fall risk. Compared to the 7-8h group, the fall risk within the <7h group was 3.67(2.59, 5.42) times higher, and the fall risk within the >9h group was 2.35 (1.29, 3.52) times higher. After adjustment, muscle mass declined by -6.82% (-11.27%, -3.83%) in the <7h group.

CONCLUSION: In summary, we observed a U-shaped relationship between sleep duration and falls. Short sleep duration have negative relationship with muscle mass decline in a Chinese, community-dwelling, elderly population.

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Urinary incontinences are related with fall and fragility fractures in elderly population: nationwide cohort study

Kim HJ, Kim JW, Jang SN, Kim KD, Yoo JI, Ha YC.

J. Bone Metab. 2018; 25(4): 267-274.

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(Copyright © 2018, Korean Society for Bone and Mineral Research)

DOI 10.11005/jbm.2018.25.4.267 **PMID**30574471 **PMCID** PMC6288612

Abstract

BACKGROUND: This prospective cohort study used nationwide claims data to investigate the incidence of fall and fragility fractures in association with urinary incontinence (UI) in the elderly,



and to compare mortality after fragility fractures in elderly patients with or without incontinence. **METHODS:** A total of 39,854 Korean adults (age, 66-80 years) who participated in health examinations between 2007 and 2012 and were followed up until 2015 were analyzed. Patient and comparison groups were classified according to the presence or absence of UI. The cumulative incidence of osteoporotic fragility fractures and falls in the 2 groups was assessed and compared. Hazard ratios for fragility fractures were calculated for the risk of UI in association with falls using a Cox proportional hazards model.

RESULTS: Of 39,854 elderly participants, 5,703 were classified in the UI group, while 34,151 were placed in the comparison group. Fall rates were significantly higher (20.8%) in the incontinence group than in the comparison group (4.7%) ($P < 0.001$). Women in the incontinence group (13.9%) showed a significantly higher incidence of all types of fragility fractures than those in the comparison group (11.8%) ($P = 0.005$). After adjustment for confounders, UI was not a significant risk factor for fragility fractures in men ($P = 0.878$) or women ($P = 0.324$).

CONCLUSIONS: This study demonstrated that elderly women with UI have a significantly higher incidence of osteoporotic fragility fractures. In addition, elderly women are at higher risk for falls.

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Use of a robotic walking aid in rehabilitation to reduce fear of falling is feasible and acceptable from the end user's perspective: a randomised comparative study

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Maturitas 2019; 120: 40-46.

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Abstract

OBJECTIVES: To determine the acceptability and feasibility of the use of a robotic walking aid to support the work of physiotherapists in reducing fear of falling in the rehabilitation of elderly patients with 'psychomotor disadaptation' (the most severe form of post-fall syndrome). Study design 20 participants with psychomotor disadaptation admitted to an academic rehabilitation ward were randomised to receive physiotherapist care supported by the SafeWalker® robotic walking aid or standard care only, for ten days. SafeWalker® supports the body weight whilst securing postural stability without relying on upper body strength or high cognitive demand. Main outcome measures The primary outcome was the feasibility and acceptability of rehabilitation sessions at five and ten days based on (i) questionnaires completed by patient and physiotherapist, (ii) the number of steps performed during sessions, (iii) replacement of a robotic session by a conventional one.

RESULTS: The mean age of the participants was 85.2 years. They had lost their ability to perform some basic living activities. Patients in the intervention group found that the rehabilitation sessions were easier ($p = 0.048$). No robotic rehabilitation session had to be replaced by conventional rehabilitation. There were no statistical differences between the two groups on the other outcome measures.

CONCLUSION: We demonstrated the feasibility and acceptability of the use of a robotic walking aid

from the perspective of both older individuals and physiotherapists. This could fill the gap between devices that fully compensate for walking and those which allow patients to maintain residual mobility.

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Injury death certificates without specification of the circumstances leading to the fatal injury - the Norwegian Cause of Death Registry 2005-2014

Ellingsen CL, Ebbing M, Alfsen GC, Vollset SE.

Popul. Health Metr. 2018; 16(1): e20.

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Abstract

BACKGROUND: For injury deaths, the underlying cause of death is defined as the circumstances leading to the injury. When this information is missing, the ICD-10 code X59 (Exposure to unspecified factor) is used. Lack of knowledge of factors causing injuries reduces the value of the cause of death statistics. The aim of this study was to identify predictors of X59-coded deaths in Norway, and to assess methods to identify the true underlying cause of injury deaths.

METHODS: We used data from the Norwegian Cause of Death Registry from 2005 to 2014. We used logistic regression to identify determinants of X59-coded deaths. For redistribution of the X59 deaths, we used a multinomial logistic regression model based on the cases where injury circumstances were known. The data were divided into training and test sets. The model was developed on the training set and assessed on the test set before it was applied to the X59 deaths. The models used death certificate information on the nature of injury and demographic characteristics as predictor variables. Furthermore, we mailed a query to the certifying physicians of X59 deaths reported in the year 2015, where we asked for additional information on the circumstances leading to the fatal injury.

RESULTS: There were 24,963 injury deaths reported to the Cause of Death Registry of Norway 2005-2014. Of these, 6440 (25.8%) lacked information on the circumstances leading to the death. The strongest predictor for a X59 death was the nature of injury (hip fracture), followed by lack of information on the scene of injury. Applying our redistribution algorithm, we estimated that 97% of the X59-coded deaths were accidental falls. The strongest covariate was the nature of injury, followed by place of death and age at death. In 2015, there were 591 X59-coded deaths. Queries were sent to the certifying doctors in 559 cases. Among the informative replies to the query, 88% of the deaths were reclassified to accidental falls.

CONCLUSIONS: A large proportion of injury deaths in Norway lack information on the circumstances leading to the fatal injury. Typically, these deaths represent accidental falls causing hip fracture in elderly individuals.

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The likelihood of self-reporting balance problems in those with advanced chronic kidney disease, slow gait speed, or low vitamin D

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Abstract

OBJECTIVE: The purpose of this study was to determine the prevalence of vitamin D (25(OH)D) and balance deficits in persons with chronic kidney disease (CKD) and the likelihood of self-reporting balance and falling problems, measured gait speed in persons with kidney disease, and low levels of vitamin D and albumin.

DESIGN: Analysis of the National Health and Nutrition Examination Survey 1999-2004 data set.

SUBJECTS: The study included 8,554 subjects aged >40 years who were categorized into CKD stages based on the glomerular filtration rate (normal kidney function and stages 1 and 2 served as the control group, and stages 3 and 4/5 served as the CKD groups).

MAIN OUTCOME MEASURES: Measured 25(OH)D levels, timed 20-foot walk, Romberg standing balance task, and self-reported balance and falling issues.

RESULTS: The prevalence of balance deficits was found to be high in this CKD sample, with fail rates increasing with kidney disease severity. Similarly, when examining the relationship between CKD stage and the measurement of balance, fail rates (impaired balance) increased and gait speed decreased with kidney disease severity. In addition, the likelihood of self-reporting a balance and falling problem in the past year was higher in persons who had advanced CKD, were of older age, were of female sex, were with former or current smoking status, had lower 25(OH)D levels, and had lower albumin levels. Similarly, the likelihood of having a 20-foot walk time of more than 8 seconds was associated with those who were older, had higher body mass index, and had lower levels of 25(OH)D and albumin.

CONCLUSION: The unique finding of this study is that increased reporting of balance and falling issues (both perceived and measured) and slower gait were found in persons with increased CKD severity and lower 25(OH)D status.

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Wobble board balance assessment in subjects with chronic ankle instability

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Abstract

BACKGROUND: Wobble boards (WBs), commonly used to train postural control, have been recently equipped with accelerometers connected to a computer displaying real-time balance performances. However, little is known about their ability to detect balance deficits in subjects with unilateral chronic ankle instability (CAI).

OBJECTIVE: To determine if computerized WBs can detect balance deficits in subjects with unilateral CAI.

METHODS: Fifteen subjects with unilateral CAI and fifteen uninjured subjects performed one WB test and one Y Balance Test (YBT) during two separate randomized sessions. WB performance was assessed as the time (s) spent on the platform by keeping it flat at 0° during three 30-s trials for each limb. Normalized (%) reach distances values for anterior, posteromedial, posterolateral directions and composite were recorded for YBT.

RESULTS: WB has been shown to be a reliable and accurate device for detecting balance deficits between and within subjects with unilateral CAI. The area under the curve for receiver operating characteristic was 0.80 (asymptotic significance 0.001), suggesting that WBs have the capability to accurately discriminate between injured and uninjured limbs. **SIGNIFICANCE:** Computerized WBs can fill the gap caused by limitations between subjective-based clinical assessment and laboratory-based testing, especially in field-based settings, where specificity, transportability and time constraints are crucial. The results of the present study suggest that WBs may facilitate the detection of balance impairments in subjects with unilateral CAI, without complexity in its use or data interpretation.

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