

Safety Literature 19th July 2020

A scoping review of fall hazards in the homes of older adults and development of a framework for assessment and intervention

Keglovits M, Clemson L, Hu YL, Nguyen A, Neff AJ, Mandelbaum C, Hudson M, Williams R, Silianoff T, Stark S. Aust. Occup. Ther. J. 2020; ePub(ePub): ePub.

(Copyright © 2020, John Wiley and Sons)

DOI 10.1111/1440-1630.12682 **PMID** 32648268

Abstract

INTRODUCTION: Comprehensive evaluation and intervention provided by occupational therapists is effective in reducing the presence of fall hazards in the homes of older adults. The purpose of this study was to document known environmental hazards and to update a previous content analysis. A secondary goal reviewed a framework for evaluation and practice.

METHODS: A comprehensive scoping review of published academic articles was performed from 1996 to 2019 to answer: What environmental hazards have been associated with falls in the homes of community-dwelling older adults? Data was extracted in a standardised critical appraisal worksheet and content analysis was conducted. A review of a conceptual framework for assessment and intervention was conducted by international experts (n = 6) in face-to-face interviews.

RESULTS: Fourteen studies met the inclusion criteria for the scoping study. The studies reported 17 in-home environmental hazards: throw rugs/carpets, clutter, cords/wires, poorly placed light switches, items placed too low, items placed too high, no grab bars, toilet seats too low, uneven floor surfaces, slippery/wet surfaces, snowy/icy surfaces, backless/unsupportive shoes, unsteady stairs, inadequate lighting, inadequate heating/cooling, step stools without railings, and pets.

CONCLUSION: A comprehensive list of specific fall hazards in and around the homes of older adults and a guiding framework offers occupational therapists an evidence-based foundation for fall prevention efforts.

Language: en

Keywords

falls; ageing; home assessment/modification; occupational therapy research

Do exercises prevent falls among older adults: where are we now? A systematic review

Senderovich H, Tsai PM. J. Am. Med. Dir. Assoc. 2020; ePub(ePub): ePub.

(Copyright © 2020, Lippincott Williams and Wilkins)

DOI 10.1016/j.jamda.2020.05.010 PMID 32646820

Abstract

OBJECTIVE: To determine whether single interventions (SI), multifactorial interventions (MI), or multiple component interventions (MCI) including vitamin D supplementation prevent the incidence of falls and fall risk factors among older adults who are community-dwelling or living in long-term care facilities.

DESIGN: Systematic review.

METHODS: PubMed, Scopus, MEDLINE, and Cochrane were searched with restrictions applied to publication year (2015–2019) and language (limited to studies published in English). After duplicate removal and title and abstract screening, 2 authors independently identified eligible studies on the basis of inclusion criteria. Risk of bias and quality of evidence were assessed.

RESULTS: Thirty-four studies were included after screening titles and abstracts from 855 citations and 129 full-text articles. Thirteen randomized-controlled trials and clinical trials (5 on MI, 1 on MCI, and 7 on SI) including 2232 participants and 21 systematic reviews (assessing SI, MI, MCI, or all) were extracted for qualitative synthesis. Fifteen out of 20 studies that reported outcomes on falls rate found a significant reduction. Seventeen out of 23 studies with outcomes on fall risk factors concluded a significant improvement. Five studies found no significant differences in falls incidence, and 5 studies found no significant differences in fall risks. One study reported worsened outcomes, including poorer balance.

CONCLUSION AND IMPLICATIONS: Although results are inconclusive, SI, MI, and MCI involving exercises may prevent falls. Vitamin D supplementation may be beneficial alongside exercise; however, whether vitamin D use consistently reduces falls incidence or fall risks remains uncertain. Exercises that are individually tailored to participants' capabilities and risks may be the most effective falls prevention interventions. Implementation may reduce medical costs and improve quality of life for older adults who are community-dwelling or are living in long-term care facilities.

Language: en

Keywords

Falls; vitamin D; interventions; geriatric; exercises

Falls in community-dwelling older adults with lower back or knee pain are associated with cognitive and emotional factors

Hirase T, Makizako H, Okubo Y, Lord SR, Okita M, Nakai Y, Takenaka T, Kubozono T, Ohishi M. *Int. J. Environ. Res. Public Health* 2020; 17(14): e4960.

(Copyright © 2020, MDPI: Multidisciplinary Digital Publishing Institute)

DOI 10.3390/ijerph17144960 PMID 32660067

Abstract

(1) Background: The present study aimed to examine physical, cognitive and emotional factors affecting falls in community-dwelling older adults with and without pain; (2) Methods: Data from 789 older adults who participated in a community-based health survey were analyzed. Participants completed questionnaires on the presence of pain and previous falls. Muscle weakness (handgrip strength < 26.0 kg for men and < 18.0 kg for women) and low skeletal muscle mass (appendicular skeletal muscle mass index < 7.0 kg/m² for men and < 5.7 kg/m² for women) were determined. Mild cognitive impairment (MCI) and depressive symptoms were assessed using the National Center for Geriatrics and Gerontology-Functional Assessment Tool and 15-item geriatric depression scale (GDS-15), respectively; (3) Results: In participants with pain, MCI and GDS-15 were associated with previous falls after adjusting for age, sex, education and medication use. In participants without pain, muscle weakness and low skeletal muscle mass were associated with previous falls when adjusting for the above covariates; (4) Conclusions: Falls in participants with pain were associated with cognitive and emotional factors, whereas falls in those without pain were associated with physical factors. Fall prevention interventions for older adults with pain may require tailored strategies to address cognitive and emotional factors.

Language: en

Keywords

accidental falls; aged; pain; mild cognitive impairment; depressive symptoms

Nursing diagnosis risk for falls in the elderly in primary health care

Santos PHFD, Stival MM, Lima LR, Santos WS, Volpe CRG, Rehem TCMSB, Funghetto SS. Rev. Bras. Enferm. 2020; 73(Suppl 3): e20180826.

(Copyright © 2020, Associacao Brasileira de Enfermagem)

DOI 10.1590/0034-7167-2018-0826 **PMID** 32667409

Abstract

OBJECTIVE: to evaluate the Nursing Diagnosis (ND) Risk for Falls in elderly subjects in primary health care in the Federal District.

METHODS: a descriptive, quantitative, cross-sectional study conducted in two basic health units. Data collection included blood collection, nursing consultation and physical evaluation of 156 elderly subjects with chronic diseases.

RESULTS: the most prevalent intrinsic risk factors of NANDA-I were visual impairment (73.7%), impaired mobility (70.5%) and history of falls (69.9%); and extrinsic factors were the use of insufficient material in the bathroom (60.3%) and loose carpets (58.3%). The intrinsic factors that increased the risk for falls were the use of assistive devices (OR 3.50; $p=0.030$), impaired walking (OR 2.84; $p=0.019$) and cognitive impairment (OR 1.26; $p=0.019$); and the extrinsic factor was the use of loose rugs (OR 1.59; $p=0.041$).

CONCLUSION: this ND has proved to be a valuable instrument for the identification of risk factors for falls in elderly subjects in primary care.

Language: en

Preliminary examination of the accuracy of a fall-detection device embedded into hearing instruments

Burwinkel JR, Xu B, Crukley J. J. Am. Acad. Audiol. 2020; ePub(ePub): ePub.

(Copyright © 2020, American Academy of Audiology)

DOI 10.3766/jaaa19056 PMID unavailable

Abstract

BACKGROUND: Accidental falls are a significant health risk to older adults and patients seen in audiology clinics. Personal emergency response systems are effective in preventing long lies (defined as remaining on the floor or ground for greater than one hour after a fall), but some individuals would prefer to wear less conspicuous devices than a traditional neck-worn pendant. No previous investigation has compared the accuracy of head-worn fall detection devices with those worn on other parts of the body. In this study, we compared the accuracy of one commonly used fall detection pendant with two variants of a new hearing instrument-based fall detection system.

Purpose: The purpose of the study was to evaluate the accuracy of detecting falls by using inertial sensors embedded in hearing instruments.

Research Design: A study with repeated measures for one group.

Study Sample: Ten young adults served as participants. All participants had normal or corrected-to normal vision during testing. Individuals were excluded if they had self-reported cardiac disorders, recent concussions, or musculoskeletal conditions.

Data Collection and Analysis: Data were collected from inertial measurement unit (IMU) sensors, embedded into a binaural set of hearing instruments, during laboratory-based simulations of falls, near-falls, and activities of daily living (ADLs). The detection state of a fall detection pendant was simultaneously recorded during performance of each trial and compared with the outputs of offline hearing instrument firmware emulators.

Results: One hearing instrument-based fall detection system was more accurate than the fall detection pendant. A second hearing instrument-based fall detection system performed similar to the fall detection pendant. Each of the three fall detection systems investigated were robust against false-positive detections during ADLs.

Conclusions: Preliminary findings demonstrate that hearing instruments embedded with a fall detection device (FDD) may be a suitable alternative to more traditional forms of FDDs (e.g., pendant, wrist-worn device, etc.) for detecting falls and potentially preventing long lies.

Language: en

Keywords:

accelerometry; accidental falls; activities of daily living; adult; hearing aids and assistive listening devices; motion

Stakeholder perspectives of fall prevention for older Australians with vision impairment: "it's just a matter of adapting them accordingly"

Dillon LL, Clemson L, Keay LJ. *Disabil. Rehabil.* 2020; ePub(ePub): ePub.

(Copyright © 2020, Informa - Taylor and Francis Group)

DOI 10.1080/09638288.2020.1792563 **PMID** 32667215

Abstract

AIM: To investigate stakeholders' perspectives of fall prevention programs for older adults with vision impairment.

METHODS: Twenty-two stakeholders (client facing professionals, service managers, and policy makers), with expertise in fall prevention or vision impairment, from organisations in south-eastern Australia, participated in this study. Individual semi-structured interviews were conducted over-the-phone (n = 19) and face-to-face (n = 3), and analysed deductively using content analysis into the following system level factors for health promotion interventions seen within the behaviour change wheel: Fiscal measures; Guidelines; Communication and marketing; and Service provision.

RESULTS: Five key themes were identified: (1) insufficient guidelines or referral pathways; (2) ongoing funding to secure service delivery and best practice implementation; (3) marketing approach: honouring consumer's perceptions of themselves; (4) practical suggestions for program delivery; and (5) incorporation into existing services. Stakeholders considered fall prevention for those with vision impairment as essential in preventative healthcare, but did not have a clear understanding of where to refer or how to deliver a fall prevention service for this population.

CONCLUSIONS: This study supports the delivery of fall prevention programs in older adults with vision impairment, but highlights the need to incorporate stakeholder perspectives into the design and delivery of such programs to ensure barriers to implementation in real world settings. Implications for Rehabilitation Older adults with vision impairment are at a high risk of falls but currently have very little access to fall prevention programs.

RESULTS support the delivery of fall prevention programs to older adults with vision impairment through existing services, as long as professionals are provided with adequate service delivery guidelines, referral pathways, and fall prevention specific education and professional development opportunities. A variety of service provision, such as group and home-based programs, or using technology, may be cost-effective and improve older adults with vision impairments' adherence to fall prevention programs.

Language: en

Keywords

Vision impairment; policy; exercise; fall prevention; stakeholder perspectives

The trend of fall-related mortality at national and provincial levels in Iran from 1990 to 2015

Ghods Z, Amanat M, Saeedi Moghaddam S, Vezvaei P, Gohari K, Haghshenas R, Amirzade-Iranaq MH, Rezaei N, Saadat S, Sheidaei A, Sharif-Alhoseini M, Sadeghian F, Jazayeri SB, Salehi M, Salamati P, Moradi-Lakeh M, Mokdad AH, O'Reilly G, Rahimi-Movaghar V. *Int. J. Inj. Control Safe. Promot.* 2020; ePub(ePub): ePub.

(Copyright © 2020, Informa - Taylor and Francis Group)

DOI 10.1080/17457300.2020.1790614 PMID 32646296

Abstract

Falls are one of the major causes of unintentional injuries. Understanding the epidemiology of fall-related mortality helps to identify the root causes of this event and planning preventive strategies to inhibit falls. The aim of this study was to assess the trend of fall-related mortality rate and its epidemiological patterns based on sex and age-groups at national and subnational levels in Iran during the years 1990 to 2015. All data were gathered from Death Registration Systems, cemetery databases of Tehran and Isfahan, the Demographic and Health Survey of 2000 and three rounds of national population and housing censuses. The age-standardized death rate (ASDR) due to falls per 100,000 people decreased from 2.61 (95% Uncertainty Interval (UI): 1.94-3.51) in 1990 to 2.13 (1.62-2.80) in 2015 at national level. Males were at higher risk of death due to falls than females. Our data showed that the elderly population was at higher risk of death due to falls and individuals less than 4-year old had the highest fall-related mortality rate among children and adolescents. Our data should be used to accelerate interventions to reduce fall-related mortality.

Language: en

Keywords

Injury; epidemiology; Iran; falls; mortality

Trends in nonfatal falls and fall-related injuries among adults aged ≥ 65 years - United States, 2012-2018

Moreland B, Kakara R, Henry A. MMWR Morb. Mortal. Wkly. Rep. 2020; 69(27): 875-881.

(Copyright © 2020, (in public domain), Publisher U.S. Centers for Disease Control and Prevention)

DOI 10.15585/mmwr.mm6927a5 PMID 32644982

Abstract

Falls are the leading cause of injury among adults aged ≥ 65 years (older adults) in the United States. In 2018, an estimated 3 million emergency department visits, more than 950,000 hospitalizations or transfers to another facility (e.g., trauma center), and approximately 32,000 deaths resulted from fall-related injuries among older adults.* Deaths from falls are increasing, with the largest increases occurring among persons aged ≥ 85 years (1). To describe the percentages and rates of nonfatal falls by age group and demographic characteristics and trends in falls and fall-related injuries over time, data were analyzed from the 2018 Behavioral Risk Factor Surveillance System (BRFSS) and were compared with data from 2012, 2014, and 2016. In 2018, 27.5% of older adults reported falling at least once in the past year, and 10.2% reported an injury from a fall in the past year. The percentages of older adults reporting a fall increased between 2012 and 2016 and decreased slightly between 2016 and 2018. Falls are preventable, and health care providers can help their older patients reduce their risk for falls. Screening older patients for fall risk, assessing modifiable risk factors (e.g., use of psychoactive medications or poor gait and balance), and recommending interventions to reduce this risk (e.g., medication management or referral to physical therapy) can prevent older adult falls (<https://www.cdc.gov/steady>).

Language: en

Keywords

Aged; Humans; Female; Male; United States; Wounds and Injuries; Accidental Falls; Aged, 80 and over

Triaxial accelerometer-based falls and activities of daily life detection using machine learning

Althobaiti T, Katsigiannis S, Ramzan N. *Sensors* (Basel) 2020; 20(13): e3777.

(Copyright © 2020, MDPI: Multidisciplinary Digital Publishing Institute)

DOI 10.3390/s20133777 PMID 32640526

Abstract

The detection of activities of daily living (ADL) and the detection of falls is of utmost importance for addressing the issue of serious injuries and death as a consequence of elderly people falling. Wearable sensors can provide a viable solution for monitoring people in danger of falls with minimal external involvement from health or care home workers. In this work, we recorded accelerometer data from 35 healthy individuals performing various ADLs, as well as falls. Spatial and frequency domain features were extracted and used for the training of machine learning models with the aim of distinguishing between fall and no fall events, as well as between falls and other ADLs. Supervised classification experiments demonstrated the efficiency of the proposed approach, achieving an F1-score of 98.41% for distinguishing between fall and no fall events, and an F1-score of 88.11% for distinguishing between various ADLs, including falls. Furthermore, the created dataset, named "ShimFall&ADL" will be publicly released to facilitate further research on the field.

Language: en

Keywords

fall detection; machine learning; accelerometer; activities of daily living; wearable sensors

A roadmap for practice-based evidence: validation of the Hester Davis Fall Risk Sscale

Kaiser J, Wills N, Reilly T, Pratt J, Tumbleson V, Niemeyer M, Mindling G. J. Nurs. Care Qual. 2020; ePub(ePub): ePub.

(Copyright © 2020, Lippincott Williams and Wilkins)

DOI 10.1097/NCQ.0000000000000503 **PMID** 32658000

Abstract

BACKGROUND: To ensure successful integration and implementation of evidence into practice, validation of measures and interventions should be performed in the population and setting in which they will be used.

PURPOSE: This article provides a method for evaluating the predictive performance of a risk tool using the Hester Davis fall risk tool as an example.

METHODS: A retrospective matched-pairs sample of fallers and nonfallers was created. Psychometric properties were calculated using 2×2 contingency tables and compared to data in the original report.

RESULTS: In this study sample, the risk tool showed minimal ability to distinguish patients at risk for falling from those not at risk.

CONCLUSIONS: Organizations are urged to assess the performance of risk tools in their own patient population. This article provides a practical approach for the validation of evidence into the practice setting.

Language: en

Assessment of risk of tripping before and after crossing obstacles under dimmed lighting conditions

Li KW, Chen Y, Li N, Duan T, Zou F. Work 2020; ePub(ePub): ePub.

(Copyright © 2020, IOS Press)

DOI 10.3233/WOR-203197 **PMID** 32651343

Abstract

BACKGROUND: Tripping and falling are common at work. Investigating the perceived risk of tripping is important for the safety of workers.

OBJECTIVE: To test the hypotheses that the perceived risk of tripping is affected by obstacle depth, obstacle height, number of obstacle, and light location under dimmed lighting conditions.

METHODS: A walkway with one to three obstacles in the middle was prepared. Each obstacle had a height of 0, 5, or 10cm and a depth of 1 or 10cm. The laboratory was dimmed with only one light either at the beginning, the midway, or at the end of the walkway. The perceived risk of tripping (PRT) was measured both before and after the participant walked through the walkway. A rating of gait disturbance (RGD) to each participant upon crossing the obstacle was also recorded.

RESULTS: The PRT measured both before and after the walk were between "almost no" to "medium" risk levels. The RGD was affected significantly by the location of the light, obstacle height, obstacle depth, and number of obstacle.

CONCLUSION: The location of light significantly affected the PRT both before and after the participants walked. The participants perceived a higher risk of tripping and had a relative high probability of foot-obstacle contact when the light was behind than when the light was in the front.

Language: en

Keywords

Gait; obstacle crossing; perceived risk of tripping; trip and fall

Common injuries associated with falls from tree stands in Iowa

Garrett M, Galet C, Lilienthal MA, Skeete DA, Granchi TS. Wilderness Environ. Med. 2020; ePub(ePub): ePub.

(Copyright © 2020, Elsevier Publishing)

DOI 10.1016/j.wem.2020.03.008 PMID 32660757

Abstract

INTRODUCTION: Tree stand falls are a common injury among hunters. This study was designed to identify specific injury patterns and local and regional factors affecting access to and care for this unique trauma cohort in Iowa.

METHODS: The University of Iowa trauma registry was retrospectively queried from 2004 to 2014 for patients with a mechanism of injury of fall from tree stands. Data are presented as mean±SD, median and range, or raw number and percentages as appropriate. Correlation analyses were performed using the Spearman coefficient.

RESULTS: Fifty-three patients were identified. Age was 44±14 (17-78) y. Median fall height was 4.6 m (15 ft), ranging from 1.5 to 12 m (5 to 40 ft). Transport times varied from <1 h to >7 h. Hypothermia was observed in 6 patients (11%). Two patients (4%) tested positive for alcohol. Three patients (6%) tested positive for drugs. Soft tissue injuries (32 [60%]; ie, lacerations and abrasions) were the most common, followed by 30 spine fractures (57%, including 11 lumbar and 10 thoracic fractures), 16 other bone fractures (30%), and 11 rib fractures (21%). Twenty-two patients underwent surgery. Median hospital length of stay was 4 d, ranging from 0 to 20 d.

CONCLUSIONS: Tree stand falls lead to significant injuries. Hypothermia represents a significant risk for these patients, and remote location resulted in long transportation time. Improper use or poor condition of safety equipment contributed to falls and injuries in a few of our patients.

Language: en

Keywords

injury; trauma; height; hunting

Effect of optical correction by fully corrected glasses on postural stability

Bae JI, Yu DS, Kim SY. PLoS One 2020; 15(7): e0235919.

(Copyright © 2020, Public Library of Science)

DOI 10.1371/journal.pone.0235919 PMID 32649679

Abstract

Although various previous studies have reported that the experimentally induced refractive errors interfered with postural control, few studies have demonstrated the optical correction effect of wearing glasses. The purpose of this study was to investigate whether wearing full corrected glasses to correct myopia and hyperopia can have a positive effect on postural stability. To this end, a total of 34 subjects (19 males and 15 females) of an average age of 22.38 ± 2.41 -years-old participated in this study. After measuring the full corrected powers of refractive errors of subjects through subjective refraction, updated glasses were provided to 17 myopic subjects and first time glasses were provided to 17 hyperopic subjects as full corrected glasses, respectively. Postural evaluation was carried out using the TETRAX biofeedback system, after which we compared and analyzed the postural instability index and sway power index before and after wearing full corrected glasses. When updated and old glasses for correcting myopia were worn, the postural instability index was significantly reduced, and the sway power index was statistically decreased only in the mid-high frequency region associated with the somatic system, compared to the no glasses state, respectively. However, after wearing first time glasses for hyperopia correction, no significant difference was found in the postural instability index or sway power index. We suggest that providing optimal visual information through the optical correction of myopic refractive error is a useful approach that can lead to synergistic effects of somatic functions involved in postural control. Consequently, we demonstrated that wearing glasses to fully correct the refractive errors has a positive effect on increasing postural control in static posture. Our results may have important clinical implications in the field of optometry and balance evaluation.

Language: en

Effects of spatial working memory in balance during dual tasking in traumatic brain injury and healthy controls

Useros Olmo AI, Periañez JA, Martínez-Pernía D, Miangolarra Page JC. Brain Inj. 2020; ePub(ePub): ePub.

(Copyright © 2020, Informa - Taylor and Francis Group)

DOI 10.1080/02699052.2020.1792984 PMID 32658560

Abstract

OBJECTIVES: The aim of this research was to assess cognitive-motor interactions through dual tasks of working memory in patients with traumatic brain injury (TBI) and control subjects.

METHODS: Twenty patients with chronic TBI with good functional level and 19 matched healthy controls performed dual working memory tasks (1-back numeric and 1-back spatial (S)) while sitting, standing, and walking. The center of pressure (COP) displacement amplitude, cadence, and error percentage (PER) were recorded as dependent variables.

RESULTS: The results revealed main effects of Group (TBI, controls) ($p = .011$) and Task factors (Single, Dual Standing 1-back, Dual Standing 1-back (S); $p = .0001$) for the COP. Patients showed greater displacement than controls ($p = .011$), and an analysis of the Task factor showed a minor displacement for the dual 1-back (S) task compared with the 1-back and single task ($p = .002$ and $p = .001$, respectively).

CONCLUSIONS: Postural control during both standing and walking improved during performance of the spatial working memory task. In the dual task, both patients and controls showed a postural prioritization as an adaptive response to the increase in cognitive demand.

Language: en

Keywords

working memory; Brain injury; dual task; limited resources model; motor control

External signs of trauma: a poor predictor of injury in found down and ground level falls

Foster SM, Muller A, Jones P, Engle L, Sherwood A, Geng TA, Ong AW. Am. J. Surg. 2020; ePub(ePub): ePub.

(Copyright © 2020, Elsevier Publishing)

DOI 10.1016/j.amjsurg.2020.06.046 **PMID** 32650978

Abstract

BACKGROUND: The significance of external signs (EST) and signs or symptoms of trauma (SS) after ground level falls or found down (GLF/FD) is unclear. We hypothesized that EST and SS were associated with injury.

METHODS: Patients with GLF/FD were retrospectively studied. SS was defined as having any EST, tenderness, or subjective complaint. Outcomes were any significant finding (SF) and Injury Severity Score (ISS) > 8. Diagnostic accuracy of EST and SS were assessed with positive and negative likelihood ratios (LR+, LR-).

RESULTS: Of 578 patients, 66% and 95% had EST and SS respectively. For EST, LR+ and LR-were 1.14 and 0.76 (SF), and 1.21 and 0.64 (ISS>8). For SS, LR+ and LR-were 1.07 and 0.19 (SF), and 1.03 and 0.49 (ISS>8).

CONCLUSION: EST lacked sufficient diagnostic accuracy for SF and ISS>8. Lack of SS was reasonably accurate in ruling out SF but not ISS>8. Triage utilizing EST alone for GLF/FD is not useful.

Language: en

Keywords

Triage; External signs of injury; Found down; Ground level fall; Overtriage; Signs and symptoms; Undertriage

Haemodialysis patients have worse postural balance with an associated risk of falls

Pérez-Gurbindo I, Angulo Carrere MT, Arribas Cobo P, Puerta M, Ortega M, Jaldo MT, de Sequera P, Alcázar R, Pérez-García R, Álvarez-Méndez AM. *Nefrologia* 2020; ePub(ePub): ePub.

(Copyright © 2020, Sociedad Espanola de Nefrologia)

DOI 10.1016/j.nefro.2020.04.014 PMID 32651084

Abstract

INTRODUCTION: Postural balance is the result of a complex interaction of sensory input which keeps us upright. Haemodialysis patients have alterations which can lead to postural instability and a risk of falls. Our objective was to analyse postural stability and its relationship with the risk of falls in haemodialysis patients using a force platform.

MATERIAL AND METHODS: This was a prospective cross-sectional study. Postural balance was recorded using a force platform in prevalent haemodialysis patients. We collected epidemiological, dialysis, analytical and treatment data. The incidence of falls was recorded over the 6 months following the tests. The postural stability analysis was performed with a portable strain gauge platform (AMTI AccuGait®) and a specific software unit for stabilometry (Balance Trainer® program). We measured 31 balance parameters; the balance variables used were: Area95; AreaEffect; VyMax; Xrange and Yrange. The stabilometry studies were performed in 3 situations: with eyes open; with eyes closed; and with the patient performing a simultaneous task. We performed one study at the start of the dialysis session, and a second study at the end. Stabilometry was measured in a control group under similar conditions.

RESULTS: We studied 32 patients with a mean age of 68 years old; of this group, 20 subjects were male and 12 were female. Their mean weight was 74kg, with a mean BMI of 27.6kg/m². In the controls, there were no significant differences in the stabilometry between the 3 situations studied. Both pre- and post-haemodialysis, patients with closed eyes showed greater imbalance, and there were significant differences with the other situations and controls. We found a significant increase in instability after the haemodialysis session, and greater instability in the 13 patients with diabetes ($P < .05$). The 4 patients with hyponatraemia ($\text{Na} < 136 \text{mmol/l}$) had worse balance in the simultaneous task situation ($P = .038$). Various drugs, such as insulin ($P = .022$), antiplatelet agents ($P = .036$) and beta-blockers ($P = .029$), were associated with imbalance. The 10 patients who suffered falls had greater imbalance, Yrange, Xrange, Area95 and AreaEffect, both pre- and post-haemodialysis ($P < .05$) than those without falls.

CONCLUSIONS: Haemodialysis patients have alterations which can lead to postural instability and a risk of falls. Prevention programmes which include specific exercises to improve balance could be beneficial in reducing the risk of falls in this population.

Language: en

Keywords

Fall risk; Postural balance; Diabetes; Balance postural; Hemodialisis; Hemodialysis; Hiponatremia; Hyponatremia; Riesgo de caídas

Preliminary examination of the accuracy of a fall-detection device embedded into hearing instruments

Burwinkel JR, Xu B, Crukley J. J. Am. Acad. Audiol. 2020; ePub(ePub): ePub.

(Copyright © 2020, American Academy of Audiology)

DOI 10.3766/jaaa19056 PMID unavailable

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Purpose: The purpose of the study was to evaluate the accuracy of detecting falls by using inertial sensors embedded in hearing instruments.

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Results: One hearing instrument-based fall detection system was more accurate than the fall detection pendant. A second hearing instrument-based fall detection system performed similar to the fall detection pendant. Each of the three fall detection systems investigated were robust against false-positive detections during ADLs.

Conclusions: Preliminary findings demonstrate that hearing instruments embedded with a fall detection device (FDD) may be a suitable alternative to more traditional forms of FDDs (e.g., pendant, wrist-worn device, etc.) for detecting falls and potentially preventing long lies.

Keywords: accelerometry; accidental falls; activities of daily living; adult; hearing aids and assistive listening devices; motion

Language: en

Prevalence and correlates of falls in a middle-aged population with osteoarthritis: data from the Osteoarthritis Initiative

Ofori-Asenso R, Ackerman IN, Soh SE. Health Soc. Care Community 2020; ePub(ePub): ePub.

(Copyright © 2020, John Wiley and Sons)

DOI 10.1111/hsc.13103 PMID 32662579

Abstract

People with osteoarthritis (OA) are at a higher risk of falls and fall-related injuries. However, there is limited knowledge of the burden and correlates of falls in middle-aged people with OA. Using data from the Osteoarthritis Initiative, this study aimed to determine the prevalence and correlates of falls among middle-aged people with OA. A total of 1,019 adults aged 45-64 years with OA were included in this cross-sectional analysis. The prevalence of self-reported falls in the past 12 months was calculated and relationships between demographic and clinical characteristics and falls history were explored via univariable and multivariable logistic regression. Of the study population (61.7% female), 43.7% (445/1,019) reported having had a fall in the last 12 months. In multivariable models, female sex (odds ratio [OR] 2.09, 95% confidence interval [CI] 1.50-2.90), Charlson score ≥ 1 (OR 1.90, 95% CI 1.42-2.55) and opioid use (OR 2.68, 95% CI 1.77-4.06) were associated with a higher likelihood of falls. Higher depression score, being White/Caucasian and higher educational attainment were also associated with a greater likelihood of falls. Having knee and hip OA was associated with a higher likelihood of falls (OR 1.79, 95% CI 1.24-2.59), compared to knee OA alone. In summary, previous falls history is concerning common among middle-aged adults with OA, with modifiable risk factors including depression and opioid use. Greater attention to falls prevention is therefore needed for this patient group, including screening for falls and tailoring existing falls prevention interventions.

Language: en

Keywords

risk factors; falls; prevalence; correlates; falls history; middle-aged; osteoarthritis

Unintentional window falls in children and adolescents

Flaherty MR, Raybould T, Savarino J, Yager P, Mooney DP, Farr BJ, Giuliano JS, Neeman E, Campbell BT, Thaker S, McKiernan C, Lewis D, Epp TK, Baertschiger RM, Jackson CCA, Rideout L, Shah A, Falank C, Ontengco J, Cairo S, McLoughlin RJ, Aidlen JT, Watson-Smith D, Wills H, Masiakos PT. *Acad. Pediatr.* 2020; ePub(ePub): ePub.

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Abstract

OBJECTIVE: Unintentional window falls represent a preventable source of injury and death in children. Despite major campaigns in some larger cities, there continue to be unintentional falls from windows throughout the United States. We aimed to identify risk factors and trends in unintentional window falls in the pediatric population in a national and regional sample.

METHODS: A retrospective analysis of annual ED visits from the National Electronic Injury Surveillance System (NEISS) using product codes specific to windows, as well as patient encounters for unintentional window falls from January 2007 - August 2017 using site-specific trauma registries from 10 tertiary care children's hospitals in New England. National and state-specific census population estimates were used to compute rates per 100,000 population.

RESULTS: There were 38,840 ED visits and 496 regional patients who unintentionally fell from a window across the study period between 0-17 years old. The majority of falls occurred in children under the age of 6, and were related to falls from a second story or below. A decreased trend in national ED visits was seen, but no change in rates over time for regional trauma center encounters. A high number of falls were found to occur in smaller cities surrounding metropolitan areas and from single family residences.

CONCLUSIONS: Falls from windows represent a low proportion of overall types of unintentional sources of injury in children, but are a high-risk for severe disability. These results provide updated epidemiologic data for targeted intervention programs, as well as raise awareness for continued education and advocacy.

Language: en

Keywords

injury; trauma; falls

Why do falls and lower limb fractures occur more frequently in the diabetic patient and how can they be prevented?

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Abstract

Due to primarily sarcopenia and hypoglycemia but also neuropathy, hypotension, analgesics and polypharmacy, there is an increased incidence of falls and hip fractures in both the type 1 and type 2 diabetic patient. Utilization of insulin, hypotensive drugs, analgesics and perhaps canagliflozin further increases the risk. Thiazolidinedione use may increase the risk of osteoporosis and fracture. Prolonged hyperglycemia resulting in cross-linking of collagen and advanced glycosylation end products alter the microarchitecture and increase bone fragility. Higher serum vitamin D levels seem to decrease the incidence of both falls and fractures. Following a hip fracture, mortality in the diabetic patient is increased largely because of cardiovascular events and pneumonia. Prevention of sarcopenia includes dietary therapy, vitamin D and testosterone replacement when appropriate.

Language: en

Keywords

Falls; Sarcopenia; Aging; Neuropathy; Diabetes; Fractures; Hypoglycemia; Osteoporosis; Polypharmacy