Safety Literature 31st March 2024

Multisite pain and intensity were associated with history fall among older adults: a cross-sectional study

Alrawaili SM, Alkhathami KM, Elsehrawy MG, Obaidat SM, Alhwoaimel NA, Alenazi AM.
J. Multidiscip. Healthc. 2024; 17: 1241-1250.

DOI: 10.2147/JMDH.S449531 **PMID**: 38524864 **PMCID**: PMC10960544

Abstract

PURPOSE: This study examined the independent associations among multisite pain, pain intensity, and the risk of falls, including a history of falls in the previous 12 months and frequent falls (≥ two falls vs one or two falls) among community-dwelling older adults.

METHODS: A cross-sectional design from Wave 2 of the National Social Life, Health, and Aging Project was used. Data on pain intensity and location (45 sites) over the past 4 weeks were collected. Multisite pain was categorized into four groups: none, one, two, and three or more sites. The main outcomes of falls were a history of falls and frequent falls. The covariates included age, sex, race, body mass index, education, medications, and comorbidities.

RESULTS: Among 3,196 participants in Wave 2, 2,697 were included because of missing key variables related to pain and fall history. The prevalence of falls and frequent falls were 30.3% (n = 817) and 12.6% (n = 339), respectively. Multisite pain at ≥ three sites (odds ratio (OR) 2.04, confidence interval (CI) [1.62, 2.57]; $p < 0.001$) and two sites (OR 1.72, 95% CI [1.30, 2.27]; $p < 0.001$) was significantly associated with an increased risk of falls. An increase in pain intensity was significantly associated with an increased risk of fall (OR 1.28, 95% CI [1.15, 1.44], $p < 0.001$), independent of multisite pain. Multisite pain at ≥3 sites (OR 2.19, 95% CI [1.56, 3.07], $p < 0.001$) and 2 sites (OR 1.54, 95% CI [1.01, 2.34], $p = 0.045$) was associated with an increased risk of frequent falls. An increase in pain intensity was associated with risk of frequent falls (OR 1.64, 95% CI [1.40, 1.91], $p < 0.001$), independent of multisite pain.

CONCLUSION: Multisite pain and pain intensity were associated with a history of falls and frequent falls among older adults, emphasizing the need for routine pain evaluation to develop fall prevention strategies in this population.

Language: en

Keywords: falling; multiple sites pain; pain severity; painful; recurrent falls

Development and external validation of the eFalls tool: a multivariable prediction model for the risk of ED attendance or hospitalisation with a fall or fracture in older adults

Archer L, Relton SD, Akbari A, Best K, Bucknall M, Conroy S, Hattle M, Hollinghurst J, Humphrey S, Lyons RA, Richards S, Walters K, West R, van der Windt D, Riley RD, Clegg A. Age Ageing 2024; 53(3): afae057.

DOI: 10.1093/ageing/afae057 **PMID**: 38520142

Abstract

BACKGROUND: Falls are common in older adults and can devastate personal independence through injury such as fracture and fear of future falls.

METHODS to identify people for falls prevention interventions are currently limited, with high risks of bias in published prediction models. We have developed and externally validated the eFalls prediction model using routinely collected primary care electronic health records (EHR) to predict risk of emergency department attendance/hospitalisation with fall or fracture within 1 year.

METHODS: Data comprised two independent, retrospective cohorts of adults aged ≥65 years: the population of Wales, from the Secure Anonymised Information Linkage Databank (model development); the population of Bradford and Airedale, England, from Connected Bradford (external validation). Predictors included electronic frailty index components, supplemented with variables informed by literature reviews and clinical expertise. Fall/fracture risk was modelled using multivariable logistic regression with a Least Absolute Shrinkage and Selection Operator penalty. Predictive performance was assessed through calibration, discrimination and clinical utility. Apparent, internal-external cross-validation and external validation performance were assessed across general practices and in clinically relevant subgroups.

RESULTS: The model's discrimination performance (c-statistic) was 0.72 (95% confidence interval, CI: 0.68 to 0.76) on internal-external cross-validation and 0.82 (95% CI: 0.80 to 0.83) on external validation. Calibration was variable across practices, with some over-prediction in the validation population (calibration-in-the-large, -0.87; 95% CI: -0.96 to -0.78). Clinical utility on external validation was improved after recalibration.

CONCLUSION: The eFalls prediction model shows good performance and could support proactive stratification for falls prevention services if appropriately embedded into primary care EHR systems.

Language: en

Keywords: falls; older people; prediction model; prevention; proactive; prognosis

Antithrombotics in the fall patient: appropriateness and risk-benefit analysis

Bethurum AJ, Zeng K, Puzdrakiewicz T, Goenka P, Collins H, Burns JB, Roche K. Am. Surg. 2024; ePub(ePub): ePub.

DOI: 10.1177/00031348241241733 **PMID**: 38532271

Abstract

Falls are the leading cause of hospitalizations following trauma nationwide, resulting in over 3 million admissions in 2020. This population is typically aged, and many are prescribed antithrombotic (AT) therapy. In this prospective study, we aimed to analyze fall history while assessing appropriateness of AT regimen relative to fall risk. Patients presenting following ground level fall (GLF) and meeting inclusion criteria during the study period were enrolled. Primary outcome was the relationship between AT therapy necessity (CHA(2)DS(2)-VASc) and fall risk (Morse Fall Risk). The cohort of 30 patients had an average age of 77. CHA(2)DS(2)-VASc and Morse Fall Risk showed a moderate-positive correlation ($r = 0.47$; $P = 0.012$); however, 17% of patients categorized as high fall risk had a <5% 1-year risk of VTE. This study demonstrates that risks of hemorrhage may outweigh thromboembolism prophylaxis in a significant number of patients and sheds light on the astonishing fall volume in this population.

Language: en

Keywords: acute care surgery; critical care; special topics; trauma; trauma acute care

A computer vision-based system to help health professionals to apply tests for fall risk assessment

Blasco-García JD, García-López G, Jiménez-Muñoz M, López-Riquelme JA, Feliu-Batlle JJ, Pavón-Pulido N, Herrero MT. Sensors (Basel) 2024; 24(6).

DOI: 10.3390/s24062015 **PMID**: 38544276 **PMCID**: PMC10974484

Abstract

The increase in life expectancy, and the consequent growth of the elderly population, represents a major challenge to guarantee adequate health and social care. The proposed system aims to provide a tool that automates the evaluation of gait and balance, essential to prevent falls in older people. Through an RGB-D camera, it is possible to capture and digitally represent certain parameters that describe how users carry out certain human motions and poses. Such individual motions and poses are actually related to items included in many well-known gait and balance evaluation tests. According to that information, therapists, who would not need to be present during the execution of the exercises, evaluate the results of such tests and could issue a diagnosis by storing and analyzing the sequences provided by the developed system. The system was validated in a laboratory scenario, and subsequently a trial was carried out in a nursing home with six residents.

RESULTS demonstrate the usefulness of the proposed system and the ease of objectively evaluating the main items of clinical tests by using the parameters calculated from information acquired with the RGB-D sensor. In addition, it lays the future foundations for creating a Cloud-based platform for remote fall risk assessment and its integration with a mobile assistant robot, and for designing Artificial Intelligence models that can detect patterns and identify pathologies for enabling therapists to prevent falls in users under risk.

Language: en

Keywords: *Artificial Intelligence; *Exercise Therapy; Aged; automation; balance; Computers; digital transformation of health systems; early diagnosis; elderly; fall risk; gait; Humans; RGB-D sensor; Risk Assessment/methods; telemedicine; tests

Gait adaptability and the effect of ocular disorders on visually guided walking in Parkinson's disease

Borm CDJM, De Graaf D, Bloem BR, Theelen T, Hoyng C, de Vries N, Weerdesteyn V. J. Parkinsons Dis. 2024; ePub(ePub): ePub.

DOI: 10.3233/JPD-230025 **PMID**: 38517803

Abstract

Gait disorders are a disabling feature of Parkinson's disease (PD). To avoid falls, people with PD should be able to adequately adapt their gait. This requires correct response inhibition and integration of visual information. In this small pilot study, we investigated PD-related impairments in gait adaptability and the influence of ocular disorders thereon. Compared with controls, persons with PD were less able to adapt their gait in unexpected situations (U=21.5, p=0.013), with only a small influence of ocular disorders on precision stepping (U=6, p=0.012 in the ML-direction and in the AP-direction, (U=20, p=0.456). This shows that people with PD have more difficulty with precision stepping than healthy controls and experience more problems with adapting their gait. We found only a small impact of ocular disorders on successfully execute precision stepping. The ability to adapt gait, particularly in challenging environmental conditions or with impaired vision, may provide a useful assessment and training option for fall prevention in PD.

Language: en

Keywords: gait adaptability; non-motor symptoms; ocular disorders; Parkinson’s disease

Non-invasive neuromodulation in reducing the risk of falls and fear of falling in community-dwelling older adults: systematic review

Bueno GAS, do Bomfim AD, Campos LF, Martins AC, Elmescany RB, Stival MM, Funghetto SS, de Menezes RL. Front. Aging Neurosci. 2023; 15: e1301790.

DOI: 10.3389/fnagi.2023.1301790 **PMID**: 38516635 **PMCID**: PMC10956576

Abstract

INTRODUCTION: Neuromodulation is a non-invasive technique that allows for the modulation of cortical excitability and can produce changes in neuronal plasticity. Its application has recently been associated with the improvement of the motor pattern in older adults individuals with sequelae from neurological conditions.

OBJECTIVE: To highlight the effects of non-invasive neuromodulation on the risk of falls and fear of falling in community-dwelling older adults.

METHODS: Systematic review conducted in accordance with the items of the Cochrane Handbook for Systematic Reviews of Interventions. Searches were carried out in electronic databases: CENTRAL, Clinical Trials, LILACS, PEDro, PubMed, Web of Science, between 13/06/2020 and 20/09/2023, including all indexed texts without language and publication date restrictions, randomized controlled clinical trials, which presented as their main outcome non-invasive neuromodulation for reducing the fear of falling and risk of falls in the older adults, regardless of gender.

RESULTS: An extensive search identified 9 eligible studies for qualitative synthesis from 8,168 potential articles. Rigorous filtering through automated tools, title/abstract screening, and full-text evaluation ensured a focused and relevant selection for further analysis. Most studies (80%) used transcranial direct current electrical stimulation as an intervention, over the motor cortex or cerebellum area, with anodal current and monopolar electrode placement. The intensity ranged from 1.2 mA to 2 mA, with a duration of 20 min (80%). The profile of the research participants was predominantly individuals over 65 years old (80%), with a high risk of falls (60%) and a minority reporting a fear of falling (40%). The outcomes were favorable for the use of neuromodulation for the risk of falls in the older adults, through improvements in static and dynamic balance.

CONCLUSION: The results may have limited applicability to direct outcomes related to the risk of falls, in addition to evidence regarding the difference or lack thereof in applicability between genders, fallers and non-fallers, as well as older adults individuals with low and high fear of falling. SYSTEMATIC REVIEW REGISTRATION: The protocol for this review was registered in the International Prospective Register of Systematic Reviews (PROSPERO) to obtain the identification of ongoing research (ID: 222429).

Language: en

Keywords: aging; fall accident; fear of falling; transcranial direct current stimulation; transcranial magnetic stimulation

Integrating fall prevention strategies into EMS services to reduce falls and associated healthcare costs for older adults

Camp K, Murphy S, Pate B. Clin. Interv. Aging 2024; 19: 561-569.

DOI: 10.2147/CIA.S453961 **PMID**: 38533419 **PMCID**: PMC10964786

Abstract

PURPOSE: The purpose of this study is to detail the implementation of fall prevention initiatives through emergency medical services (EMS) and associated outcomes.

METHODS: Paramedics with MedStar Mobile Healthcare utilized the Stopping Elderly Accidents, Deaths, and Injuries (STEADI) fall prevention model to screen and direct intervention through 9-1-1 emergency response, High Utilization Group (HUG), and 30-day Hospital Readmission Avoidance (HRA) programs. Outcomes from 9-1-1 calls measured the number of older adults screened for falls and identified risk factors. The HUG and HRA programs measured change in quality of life with EuroQol-5D, referral service utilization, falls, emergent healthcare utilization, and hospital readmission data. Analysis included costs associated with reduced healthcare usage.

RESULTS: Emergency paramedics provided fall risk screening for 50.5% (n=45,090) of adults aged 65 and older and 59.3% were at risk of falls, with 48.1% taking medications known to increase the risk of falls. Services provided through the HUG and HRA programs, along with additional needed referral services, resulted in a 37.2% reduction in fall-related 9-1-1 calls and a 29.5% increase in overall health status related to quality of life. Analysis of the HUG program revealed potential savings of over $1 million with a per-patient enrolled savings of $19,053. The HRA program demonstrated a 16.4% hospital readmission rate, in comparison to a regional average of 30.2%, and a cost-savings of $4.95 million or $15,618 per enrolled patient.

CONCLUSION: Implementation of the STEADI model into EMS services provides an effective and cost-saving model for addressing fall prevention for older adults, provides meaningful and impactful improvement for older adults, and could serve as a model for other EMS programs.

Language: en

Keywords: *Accidental Falls/prevention & control; *Emergency Medical Services; age-friendly; Aged; emergency providers; fall prevention; Health Care Costs; Humans; Mobile Integrated Healthcare; paramedics; Quality of Life; Risk Factors

Reducing falls among residents of retirement homes: a DNP project

Coleman A. Nurse Pract. 2024; 49(4): 39-47.

DOI: 10.1097/01.NPR.0000000000000161 **PMID**: 38530379

Abstract

Falls among older adults (OAs) living in retirement homes (RHs) in Canada are a major public health concern due to high morbidity and mortality as well as significant healthcare expenditures. This quality improvement (QI) initiative, conducted for the author's Doctor of Nursing Practice (DNP) project, aimed to decrease fall rates and ED transfers related to falls among OAs in six RHs across the Greater Toronto Area in Ontario, Canada through a multipart intervention with two primary goals. First, the project aimed to facilitate RH NPs' implementation of a comprehensive fall risk assessment and fall prevention strategy in their practice by incorporating the Stopping Elderly Accidents, Deaths & Injuries (STEADI) toolkit into their armamentarium. Second, it sought to enhance the knowledge of the RHs' registered practical nurses (RPNs), personal support workers (PSWs), and unregulated care providers (UCPs) in assessing fall risk and incorporating fall prevention strategies in their daily practice. By improving NP, RPN, PSW, and UCP knowledge and increasing (by 20%) RPN, PSW, and UCP use of fall prevention strategies, this QI initiative successfully reduced fall rates in the RHs by 40.4%, with no falls requiring transfer to the ED, in the postintervention period. The results of this project highlight the need for an interdisciplinary approach to fall risk reduction in RHs that includes implementation of multifactorial intervention strategies as well as effective organizational policies and procedures for maximum impact.

Language: en

Risk assessment and prevention of falls in older community-dwelling adults: a review

Colón-Emeric CS, McDermott CL, Lee DS, Berry SD. J. Am. Med. Assoc. JAMA 2024; ePub(ePub): ePub.

DOI: 10.1001/jama.2024.1416 **PMID**: 38536167

Abstract

IMPORTANCE: Falls are reported by more than 14 million US adults aged 65 years or older annually and can result in substantial morbidity, mortality, and health care expenditures.
OBSERVATIONS: Falls result from age-related physiologic changes compounded by multiple intrinsic and extrinsic risk factors. Major modifiable risk factors among community-dwelling older adults include gait and balance disorders, orthostatic hypotension, sensory impairment, medications, and environmental hazards. Guidelines recommend that individuals who report a fall in the prior year, have concerns about falling, or have gait speed less than 0.8 to 1 m/s should receive fall prevention interventions. In a meta-analysis of 59 randomized clinical trials (RCTs) in average-risk to high-risk populations, exercise interventions to reduce falls were associated with 655 falls per 1000 patient-years in intervention groups vs 850 falls per 1000 patient-years in nonexercise control groups (rate ratio [RR] for falls, 0.77; 95% CI, 0.71-0.83; risk ratio for number of people who fall, 0.85; 95% CI, 0.81-0.89; risk difference, 7.2%; 95% CI, 5.2%-9.1%), with most trials assessing balance and functional exercises. In a meta-analysis of 43 RCTs of interventions that systematically assessed and addressed multiple risk factors among individuals at high risk, multifactorial interventions were associated with 1784 falls per 1000 patient-years in intervention groups vs 2317 falls per 1000 patient-years in control groups (RR, 0.77; 95% CI, 0.67-0.87) without a significant difference in the number of individuals who fell. Other interventions associated with decreased falls in meta-analysis of RCTs and quasi-randomized trials include surgery to remove cataracts (8 studies with 1834 patients; risk ratio [RR], 0.68; 95% CI, 0.48-0.96), multicomponent podiatry interventions (3 studies with 1358 patients; RR, 0.77; 95% CI, 0.61-0.99), and environmental modifications for individuals at high risk (12 studies with 5293 patients; RR, 0.74; 95% CI, 0.61-0.91). Meta-analysis of RCTs of programs to stop medications associated with falls have not found a significant reduction, although deprescribing is a component of many successful multifactorial interventions.

CONCLUSIONS AND RELEVANCE: More than 25% of older adults fall each year, and falls are the leading cause of injury-related death in persons aged 65 years or older. Functional exercises to improve leg strength and balance are recommended for fall prevention in average-risk to high-risk populations. Multifactorial risk reduction based on a systematic clinical assessment for modifiable risk factors may reduce fall rates among those at high risk.

Language: en

The characteristics and risk factors of fatal falls among adults aged 60 and above in Southwest China

Deng R, Li B, Qin M, Yu X, Sun J, Jiao F, Huang Y. Sci. Rep. 2024; 14(1): e7020.

DOI: 10.1038/s41598-024-54265-9 **PMID**: 38528015 **PMCID**: PMC10963769

Abstract

Falls constitute a leading cause of unintentional injury deaths among older adults. This study aimed to examine the comprehensive characteristics of fatal falls among older individuals in Yunnan Province, China, to highlight the challenges faced in elderly care. A total of 22,798 accidental fall-related deaths were extracted from China's National Disease Surveillance Points System aged 60 and above between 2015 and 2019. Quantitative and textual data were analyzed to assess the incidence rates of initiating factors, locations, symptoms, and overall survival (OS) outcomes after falling. Hypertension emerged as the most significant intrinsic factor, especially among individuals aged between 70 and 79, female older adults, and urban residents ($P < 0.001$). Home was identified as the most common location where fatal falls occurred (61.19%). The head was the most commonly injured body region (58.75%). The median of OS for all fatal falls was 2 days (0.13, 30), of which deaths occurred within 24 h [9287 (49.36%)]. There were instances where timely discovery after falling did not occur in 625 cases; their median of OS was significantly shorter compared to those discovered promptly after falling ($P < 0.001$). Targeted interventions focusing on fall prevention and post-fall care are equally crucial for the well-being of older adults.

Language: en

Keywords: *Accidental Falls/prevention & control; Aged; China/epidemiology; Female; Humans; Incidence; Risk Factors; Urban Population

Perceived balance, balance performance, and falls among community-dwelling older adults: a retrospective, cross-sectional study

Dolan HR, Pohl J, Pituch K, Coon DW. J. Aging Health 2024; ePub(ePub): ePub.

DOI: 10.1177/08982643241242518 PMID: 38545964

Abstract

OBJECTIVES: To examine the extent to which older adults' perceived balance, a balance performance test, and fear of falling (FOF) were associated with falls in the last month.

METHODS: The Health Belief Model served as the theoretical framework. A retrospective, cross-sectional, secondary analysis using data from the National Health and Aging Trends Study was conducted (N = 7499).

RESULTS: Multiple logistic regression analysis revealed that the odds of reporting a fall in the past month were 3.3 times ($p < .001$) greater for participants who self-reported having a balance problem compared to those who did not. The Short Physical Performance Battery and FOF were not uniquely associated with falls.

DISCUSSION: Our findings support limited evidence suggesting that older adults' perceived balance is a better predictor of falls than balance performance. Assessing older adults' perceived balance may be a new way to assess older adults' fall risk to prevent future falls.

Language: en

Keywords: balance performance; fear of falling; health belief model; older adults; perceived balance

Combining user-centered design and behavioral theory to enhance health technologies: a personas-based approach for a primary-care based multifactorial falls risk assessment tool

Groos SS, Linn AJ, Kuiper JI, van Schoor NM, van der Velde N, van Weert JCM. Int. J. Med. Inform. 2024; 186: e105420.

DOI: 10.1016/j.ijmedinf.2024.105420 **PMID**: 38518678

Abstract

INTRODUCTION: Multifactorial falls risk assessment tools (FRATs) can be an effective falls prevention method for older adults, but are often underutilized by health care professionals (HCPs). This study aims to enhance the use and implementation of multifactorial FRATs by combining behavioral theory with the user-centered design (UCD) method of personas construction. Specifically, the study aimed to (1) construct personas that are based on external (i.e., needs, preferences) and intrinsic user characteristics (i.e., behavioral determinants); and (2) use these insights to inform requirements for optimizing an existing Dutch multifactorial FRAT (i.e., the 'Valanalyse').

METHODS: Survey data from HCPs (n = 31) was used to construct personas of the 'Valanalyse.' To examine differences between clusters on 68 clustering variables, a multivariate cluster analysis technique with non-parametric analyses and computational methods was used. The aggregated external and intrinsic user characteristics of personas were used to inform key design and implementation requirements for the 'Valanalyse,' respectively, whereby intrinsic user characteristics were matched with appropriate behavior change techniques to guide implementation.

RESULTS: Significant differences between clusters were observed in 20 clustering variables (e.g., behavioral beliefs, situations for use). These variables were used to construct six personas representing users of each cluster. Together, the six personas helped operationalize four key design requirements (e.g., guide treatment-related decision making) and 14 implementation strategies (e.g., planning coping responses) for optimizing the 'Valanalyse' in Dutch geriatric, primary care settings.

CONCLUSION: The findings suggest that theory- and evidence-based personas that encompass both external and intrinsic user characteristics are a useful method for understanding how the use and implementation of multifactorial FRATs can be optimized with and for HCPs, providing important implications for developers and eHealth interventions with regards to encouraging technology adoption.

Language: en

Keywords: Behavioral theory; Implementation; Multifactorial falls risk assessment tools; Personas; User-centered design

The critical role of primary care health care professionals in referring older adults to community-based fall prevention programs

Howland J, Peterson EW. Front. Public Health 2024; 12: e1377972.

DOI: 10.3389/fpubh.2024.1377972 **PMID**: 38544734 **PMCID**: PMC10965610

Abstract

Among older adults, falls are common and the leading cause of fatal and non-fatal injuries (1). In the United States, one in four older adults ages 65 and older reports falling each year (2). On average, 100 older adults died every day because of falls in 2021 (2) and estimates of medical costs of fatal and non-fatal older adult falls are ~$50 billion annually (3). About 20% of falls require medical attention (4). Falls leading to injuries can affect levels of activity, psychosocial status, and quality of life. Even when falls do not require medical attention, the experience of falling can result in fear of falling (5). While a reasonable level of concern can prevent engagement in risky activities, fear of falling that is disproportionate with functional abilities can prevent engagement in activities necessary to maintain health and wellbeing. Fear of falling is associated with depressive symptomatology (6), impacts gait (7), leads to activity curtailment (8-10), and increased fall risk (5, 8).

Trends

Between 2001 and 2021, the number of Americans dying from unintentional falls increased from 15,000 to over 44,000 as the crude death rate rose from 5.3 (per 100,000 population) to 13.5 (1). No demographic is unaffected. Among racial and ethnic groups, White older adults have the highest death rate from falls, and the biggest increase, however death rates are rising among Black seniors, Hispanic seniors, Asian seniors, and Native American seniors alike (11). While this trend is not completely understood, there may be several contributors. Some of the increase in fall mortality may be due to innovations in medical record keeping that document causes and circumstances of injuries (12), demographic trends and pharmacological factors are also at play. Older adults are living longer. Globally, the number of persons aged 60 years or over is expected to more than double, from 841 million people in 2013 to more than 2 billion in 2050 (13) and many are or will be living with frailty, co-morbidities and chronic health conditions that could increase fall risk (14, 15). Fourteen medication classes, most of which are psychotropic medications, have been identified as fall-risk increasing drugs (FRID) (16). Although falls are widely recognized as common and preventable adverse drug events (17), healthcare professionals must make decisions about deprescribing FRID that consider patient preferences and the trade-offs between competing health conditions...

Language: en

Keywords: *Accidental Falls/prevention & control; *Primary Health Care; Aged; community-based programs; falls; falls prevention; Humans; older adults; primary care

Correction to: Prevalence of osteoporosis, sarcopenia, and high falls risk in healthy community-dwelling Thai older adults: a nationwide cross-sectional study

JBMR Plus 2024; 8(4): ziae040.

DOI: 10.1093/jbmrpl/ziae040 **PMID**: 38523664 **PMCID**: PMC10958766

Abstract

[This corrects the article DOI: 10.1093/jbmrpl/ziad020.].

This is a correction to: Apichat Asavamongkolkul, Nath Adulkasem, Pojchong Chotiyarnwong, Ekasame Vanitcharoenkul, Chandhanarat Chandhanayingyong, Panai Laohaprasitiporn, Krabkaew Soparat, Aasis Unnanuntana, Prevalence of osteoporosis, sarcopenia, and high falls risk in healthy community-dwelling Thai older adults: a nationwide cross-sectional study, JBMR Plus, Volume 8, Issue 2, February 2024, ziad020, https://doi.org/10.1093/jbmrpl/ziad020

In the originally published version of this manuscript the graphical abstract was inadvertently omitted. It has now been added to the paper.

Language: en

Falls prevention for older adults

Leung PB, Alexander JT, Ouchida KE. J. Am. Med. Assoc. JAMA 2024; ePub(ePub): ePub.

DOI: 10.1001/jama.2023.26942 **PMID**: 38536162

Abstract

Approximately 30% of adults aged 65 years or older experience at least 1 fall annually. Yet falls are not an inevitable part of aging.1 These guidelines outline best practices for assessing fall risk and for prescribing practical, person-centered interventions that address mobility; sensory, cognitive, and autonomic function; and active medical problems, medications, environmental risk, and activities of daily living.

Language: en

The effect of a hip fragility pathway on outcomes of ground level falls in the elderly

Nadaud J, Heidel E, Daley B, McKnight C. Am. Surg. 2024; ePub(ePub): ePub.

DOI: 10.1177/00031348241241685 **PMID**: 38532264

Abstract

Fragility hip fractures result from low energy mechanisms and are associated with morbidity and mortality, especially in the elderly. We examined outcomes 2 years before and after implementation of a fragility fracture program. The pathway involves emergency department clearance and admission by a medical service with orthopedic consultation. Demographics include age, gender, fracture location, injury severity score (ISS), and ASA. Outcomes include DVT/PE, mortality, disposition, non-operative rate, ICU admission, time to surgery (TTS), length of stay (LOS), and admission service. 777 patients were included (383 PRE/394 POS). POS patients were slightly younger. Trauma admission decreased and LOS and TTS increased. There were no other demographic or outcome differences. Although TTS increased, it remained under 48 hours. Length of stay increase was possibly a reflection of COVID-19. Decreased trauma admission demonstrates pathway adherence. Further studies need to be conducted to verify that quality care can be maintained after initiation of a hip fragility pathway.

Language: en

Keywords: fragility fracture; geriatrics; hip fracture; trauma; trauma acute care

Multicomponent exercise intervention for preventing falls and improving physical functioning in older nursing home residents: a single-blinded pilot randomised controlled trial

Sadaqa M, Debes WA, Németh Z, Bera-Baka Z, Vachtler-Szepesi M, Nácziné Földes L, Prémusz V, Hock M. J. Clin. Med. 2024; 13(6): e1577.

DOI: 10.3390/jcm13061577 **PMID**: 38541803

Abstract

BACKGROUND: Older nursing home residents are at a greater risk of falling due to frailty. Exercise is effective at hampering frailty and related adverse events, including falls.

OBJECTIVES: Our purpose was to evaluate the effect of a 12-week moderate-intensity multicomponent exercise programme on the number of falls and physical functioning among older nursing home residents. Also, we examined the association between the number of falls and demographics as well as physical and cognitive baseline data.

METHODS: The study protocol was registered on clinicaltrials.gov with the following identifier: NCT05835297. Older adults aged 65 years and over were recruited from a nursing home, and eligible and consenting residents were randomly allocated to two parallel groups: the intervention group, which performed a multicomponent exercise programme composed of strength, balance, and aerobic training (n = 12), and the control group, which received usual care (n = 12). Outcomes included falls, and measures of strength, balance, and mobility.

RESULTS: We had high adherence to exercise sessions, and no adverse events were recorded. We observed a non-significant reduction in falls ($p = 0.34$) and a significant improvement in Short Physical Performance Battery ($p = 0.003$) after the exercise programme. Falls were associated with being female and having diminished physical or cognitive function.

CONCLUSIONS: Multicomponent exercise programmes should be implemented regularly in nursing homes for their effectiveness. Future studies with bigger samples, including participants with worse physical and cognitive impairments, as well as follow-up periods are required.

Language: en

Keywords: balance exercise; falls; frailty; long-term care facility; multicomponent exercise; nursing home; older people; physical function; randomised controlled trial; strength exercise

Development and internal validation of a dynamic fall risk prediction and monitoring tool in aged care using routinely collected electronic health data: a landmarking approach

Wabe N, Meulenbroeks I, Huang G, Silva SM, Gray LC, Close JCT, Lord S, Westbrook JI. J. Am. Med. Inform. Assoc. 2024; ePub(ePub): ePub.

DOI: 10.1093/jamia/ocae058 **PMID**: 38531675

Abstract

OBJECTIVES: Falls pose a significant challenge in residential aged care facilities (RACFs). Existing falls prediction tools perform poorly and fail to capture evolving risk factors. We aimed to develop and internally validate dynamic fall risk prediction models and create point-based scoring systems for residents with and without dementia.

MATERIALS AND METHODS: A longitudinal cohort study using electronic data from 27 RACFs in Sydney, Australia. The study included 5492 permanent residents, with a 70%-30% split for training and validation. The outcome measure was the incidence of falls. We tracked residents for 60 months, using monthly landmarks with 1-month prediction windows. We employed landmarking dynamic prediction for model development, a time-dependent area under receiver operating characteristics curve (AUROCC) for model evaluations, and a regression coefficient approach to create point-based scoring systems.

RESULTS: The model identified 15 independent predictors of falls in dementia and 12 in nondementia cohorts. Falls history was the key predictor of subsequent falls in both dementia (HR 4.75, 95% CI, 4.45-5.06) and nondementia cohorts (HR 4.20, 95% CI, 3.87-4.57). The AUROCC across landmarks ranged from 0.67 to 0.87 for dementia and from 0.66 to 0.86 for nondementia cohorts but generally remained between 0.75 and 0.85 in both cohorts. The total point risk score ranged from -2 to 57 for dementia and 0 to 52 for nondementia cohorts.

DISCUSSION: Our novel risk prediction models and scoring systems provide timely person-centered information for continuous monitoring of fall risk in RACFs.

CONCLUSION: Embedding these tools within electronic health records could facilitate the implementation of targeted proactive interventions to prevent falls.

Language: en

Keywords: fall risk prediction; falls; nursing homes; residential aged care

Validation of a fall rate prediction model for community-dwelling older adults: a combined analysis of three cohorts with 1850 participants

Wapp C, Mittaz Hager AG, Rikkonen T, Hilfiker R, Biver E, Ferrari S, Kröger H, Zwahlen M, Zysset P. BMC Geriatr. 2024; 24(1): e287.

DOI: 10.1186/s12877-024-04811-x **PMID**: 38539089

Abstract

BACKGROUND: Fragility fractures in older adults are often caused by fall events. The estimation of an expected fall rate might improve the identification of individuals at risk of fragility fractures and improve fracture prediction.

METHODS: A combined analysis of three previously developed fall rate models using individual participant data (n = 1850) was conducted using the methodology of a two-stage meta-analysis to derive an overall model. These previously developed models included the fall history as a predictor recorded as the number of experienced falls within 12 months, treated as a factor variable with the levels 0, 1, 2, 3, 4 and ≥ 5 falls. In the first stage, negative binomial regression models for every cohort were fit. In the second stage, the coefficients were compared and used to derive overall coefficients with a random effect meta-analysis. Additionally, external validation was performed by applying the three data sets to the models derived in the first stage.

RESULTS: The coefficient estimates for the prior number of falls were consistent among the three studies. Higgin's I(2) as heterogeneity measure ranged from 0 to 55.39%. The overall coefficient estimates indicated that the expected fall rate increases with an increasing number of previous falls. External model validation revealed that the prediction errors for the data sets were independent of the model to which they were applied.

CONCLUSION: This analysis suggests that the fall history treated as a factor variable is a robust predictor of estimating future falls among different cohorts.

Language: en

Keywords: *Fractures, Bone; *Independent Living; Aged; Count regression; Falls; Fragility fractures; Humans; Model validation; Older adults

Relationship between fear of falling and quality of life in nursing home residents: the role of activity restriction

Xu D, Wang Y, Zhu S, Zhao M, Wang K. Geriatr. Nurs. 2024; 57: 45-50.

DOI: 10.1016/j.gerinurse.2024.03.006 **PMID**: 38520817

Abstract

This study investigates the mediating role of activity restriction in the relationship between the fear of falling and health outcomes. This was a cross-sectional study with convenience sampling of 316 nursing home residents. Generalized structural equation modeling was conducted to test the mediating role. The results showed that residents with fear of falling were more likely to restrict their activities and residents who often or always restricted activities reported lower levels of quality of life and higher levels of depression. Severe activity restriction accounted for 75 % of the total effect of fear of falling on quality of life and 69 % of the total effect of fear of falling on depression. Fall prevention efforts should focus on strategies or interventions to reduce residents' excessive fear of falling and promote activity engagement. Physical and social activities will not only prevent future falls but also improve residents' quality of life and mental health.

Language: en

Keywords: Accidental falls; Activity restriction; Depression; Fear of falling; Mediation analysis; Quality of life

The effectiveness of virtual reality exercise games on balance functions and fear of falling in women with osteoporosis

Yilmaz N, Kösehasanoğulları M. Rheumatol. Int. 2024; ePub(ePub): ePub.

DOI: 10.1007/s00296-024-05569-6 **PMID**: 38519809

Abstract

To investigate and compare the effectiveness of Nintendo Wii games and home exercises on balance functions in patients with osteoporosis, an important disease adversely affecting balance functions. The patients included in the study were randomized into two groups the Wii exercise group (n = 30) and the home exercise group (n = 30). Wii exercise group performed balance exercises with a Nintendo Wii device and balance board three times a week for 12 weeks under the supervision of a physiotherapist in the hospital, and home exercise group was prescribed home exercises three days a week for 12 weeks. Balance functions were evaluated with the timed up-and-go-test and Berg Balance Scale, and the fall risk was evaluated with the Falls Efficacy Scale at the beginning and end of 12 weeks of treatment. Comparison of pre- and post-treatment timed up-and-go-test, Berg Balance Scale, and Falls Efficacy Scale results in both groups revealed statistically significant improvements ($p = 0.001$; $p < 0.05$). Furthermore, post-treatment test scores between the two groups demonstrated a significant enhancement in Wii exercise group regarding the Berg Balance Scale score (Mean ± SD 52.9 ± 3.63) ($p = 0.001$; $p < 0.05$). Within the osteoporotic population, balance functions serve as robust predictors of fall risk. Improvement in balance functions is crucial for the prevention of falls and subsequent osteoporotic fractures. In our study, we found that balance exercises performed with Wii games are effective in improving balance functions in patients with osteoporosis.

Language: en

Keywords: Balance; Exercises; Exergames; Osteoporosis