

Effects of a case management-based intervention on non-motor risk factors for falls in older people with history of falls: a randomised clinical trial

Florido JVB, Caetano MJD, Janducci AL, Sossai MI, Dias ALO, Gramani-Say K, Ansai JH. *Psychogeriatr.* 2024; ePub(ePub): ePub.

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PMID: 39039430

Abstract

BACKGROUND: Falls are directly related to morbidity and mortality of older people. Multifactorial approaches that are individualised and based on fall risk factors are necessary. This study aims to verify the effects of a case management-based intervention on non-motor risk factors for falls in community-dwelling older people with a history of falls.

METHODS: The intervention applied a multidimensional assessment of risk factors for falls, a discussion about the identified risk factors, the preparation of an individualised plan with the participant, and the application, monitoring and review of the plan.

RESULTS: There was a significant interaction between groups and assessments only in the visuospatial domain ($P = 0.031$). After simple main effects analysis, differences between groups and assessments were not significant, although there was a tendency of worse visuospatial performance in the control group in the follow-up assessment ($P = 0.099$). There were no significant differences between groups or between assessments in other variables.

CONCLUSION: The intervention has the potential to maintain non-motor risk factors for falls in community-dwelling older people with a history of falls. However, more clinical trials are needed to prove its effects.

Language: en

Keywords: cognition; accidental falls; aged; fall prevention; neuropsychological tests

Community emergency medical services approaches to fall prevention: a systematic review

Friend TH, Thomas HM, Ordoobadi AJ, Bain PA, Jarman MP. *Inj. Prev.* 2024; ePub(ePub): ePub.

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DOI: 10.1136/ip-2023-045110

PMID: 39038943

Abstract

BACKGROUND: Falls are a leading cause of morbidity and mortality among older adults in the USA. Current approaches to fall prevention often rely on referral by primary care providers or enrolment during inpatient admissions. Community emergency medical services (CEMS) present a unique opportunity to rapidly identify older adults at risk for falls and provide fall prevention interventions in the home. In this systematic review, we seek to assess the efficacy and qualitative factors determining success of these programs.

METHODS: Studies reporting the outcomes of fall prevention interventions delivered by EMS were identified by searching the electronic databases PubMed, Embase, Web of Science Core Collection, CINAHL and the Cochrane Central Register of Controlled Trials through 11 July 2023.

RESULTS: 35 studies including randomised and non-randomised experimental trials, systematic reviews and qualitative research primarily from Western Europe, the USA, Australia and Canada were included in our analysis. Current fall prevention efforts focus heavily on postfall referral of at-risk community members. CEMS fall prevention interventions reduced all-cause and fall-related emergency department encounters, subsequent falls and EMS calls for lift assist. These interventions also improved patient health-related quality of life, independence with activities of daily living, and secondary health outcomes.

CONCLUSIONS: CEMS programmes provide an opportunity for direct, proactive fall prevention on the individual level. Addressing barriers to implementation in the context of current emergency medical systems in the USA is the next step toward widespread implementation of these novel fall prevention interventions.

Language: en

Keywords: interventions; systematic review; fall; older people; prehospital; trauma systems

Healthcare spending for non-fatal falls among older adults, USA

Haddad YK, Miller GF, Kakara R, Florence C, Bergen G, Burns ER, Atherly A. *Inj. Prev.* 2024; 30(4): 272-276.

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PMID: 39029927

Abstract

BACKGROUND: The older adult (65+) population in the USA is increasing and with it the number of medically treated falls. In 2015, healthcare spending attributable to older adult falls was approximately US\$50 billion. We aim to update the estimated medical expenditures attributable to older adult non-fatal falls.

METHODS: Generalised linear models using 2017, 2019 and 2021 Medicare Current Beneficiary Survey and cost supplement files were used to estimate the association of falls with healthcare expenditures while adjusting for demographic characteristics and health conditions in the model. To portion out the share of total healthcare spending attributable to falls versus not, we adjusted for demographic characteristics and health conditions, including self-reported health status and certain comorbidities associated with increased risk of falling or higher healthcare expenditure. We calculated a fall-attributable fraction of expenditure as total expenditures minus total expenditures with no falls divided by total expenditures. We applied the fall-attributable fraction of expenditure from the regression model to the 2020 total expenditures from the National Health Expenditure Data to calculate total healthcare spending attributable to older adult falls.

RESULTS: In 2020, healthcare expenditure for non-fatal falls was US\$80.0 billion, with the majority paid by Medicare.

CONCLUSION: Healthcare spending for non-fatal older adult falls was substantially higher than previously reported estimates. This highlights the growing economic burden attributable to older adult falls and these findings can be used to inform policies on fall prevention efforts in the USA.

Language: en

Keywords: Humans; Aged; Female; Male; United States/epidemiology; Aged, 80 and over; fall; *Accidental Falls/economics/statistics & numerical data/prevention & control; *Health Expenditures/statistics & numerical data; *Medicare/economics; costs; older people

Enhanced Parkinson's gait, reduced fall risk, and improved cognitive function through multimodal rehabilitation combined with rivastigmine treatment

Huang J, Liang M, Jiang D, Qin B, Zhang W. Am. J. Transl. Res. 2024; 16(6): 2379-2388.

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PMCID: PMC11236654

Abstract

OBJECTIVE: This study aimed to examine the effects of combined rehabilitation and rivastigmine treatment on patients with Parkinson's disease (PD).

METHODS: Gait parameters were assessed using the Gibbon Gait Analyzer in fifteen patients. Baseline gait data and cognitive assessments were collected. Each patient underwent external counterpulsation therapy, transcranial magnetic stimulation therapy, and exercise therapy for one hour per day, five days a week for three weeks. Post-intervention, gait and cognitive data were re-evaluated. Alongside their standard PD medications, all participants were administered rivastigmine throughout the study period.

RESULTS: The intervention significantly enhanced motor function in the single-task test, evidenced by marked improvements in gait metrics such as stride width and walking speed, and a substantial reduction in fall risk. Cognitive function, assessed by mini-mental state examination and Montreal cognitive assessment, showed an improvement trend after the three-week intervention. Improvements in dual-task walking function were observed, although these changes did not reach statistical significance.

CONCLUSION: Multimodal exercise training combined with rivastigmine treatment significantly improves certain gait parameters in the single-task test, enhances balance, and reduces the risk of falling in patients with PD. Cognitive function also demonstrated improvement.

Language: en

Keywords: external counterpulsation therapy; multimodal exercise; Parkinson's disease; rivastigmine; transcranial magnetic stimulation

Effectiveness of energy absorbing floors in reducing hip fractures risk among elderly women during sideways falls

Huang Q, Zhou Z, Kleiven S. *J. Mech. Behav. Biomed. Mater.* 2024; 157: e106659.

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PMID: 39029349

Abstract

Falls among the elderly cause a huge number of hip fractures worldwide. Energy absorbing floors (EAFs) represent a promising strategy to decrease impact force and hip fracture risk during falls. Femoral neck force is an effective predictor of hip injury. However, the biomechanical effectiveness of EAFs in terms of mitigating femoral neck force remains largely unknown. To address this, a whole-body computational model representing a small-size elderly woman with a biofidelic representation of the soft tissue near the hip region was employed in this study, to measure the attenuation in femoral neck force provided by four commercially available EAFs (Igelkott, Kradal, SmartCells, and OmniSports). The body was positioned with the highest hip force with a -10° trunk angle and $+10^\circ$ anterior pelvis rotation. At a pelvis impact velocity of 3 m/s, the peak force attenuation provided by four EAFs ranged from 5% to 19%. The risk of hip fractures also demonstrates a similar attenuation range. The results also exhibited that floors had more energy transferred to their internal energy demonstrated greater force attenuation during sideways falls. By comparing the biomechanical effectiveness of existing EAFs, these results can improve the floor design that offers better protection performance in high-fall-risk environments for the elderly.

Language: en

Keywords: Elderly sideways fall; Energy absorbing floors; Femoral neck force; Finite element simulation; Hip fracture

Sedentary behaviour and fall-related injuries in aging adults: results from the Canadian Longitudinal Study on Aging (CLSA)

Gallibois M, Hennah C, Sénéchal M, Fuentes Diaz MF, Leadbetter B, Bouchard DR. JAR life 2024; 13: 93-98.

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PMID: 39035110

PMCID: PMC11258374

Abstract

BACKGROUND: Falls, and more specifically, fall-related injuries, are costly to the healthcare system and can harm one's autonomy.

OBJECTIVES: To study the impact of sedentary behaviour associated with fall-related injuries and how a change in sedentary behaviour may impact the risk of a fall-related injury.

DESIGN: From baseline to the first follow-up, cross-sectional and longitudinal data analysis from the Canadian Longitudinal Study of Aging (CLSA) cohort. **PARTICIPANTS:** CLSA data from 43,558 Canadians aged 45-85 were included in this study. **MEASUREMENTS:** At baseline and follow-up, sedentary behaviour time was categorized as low (<1,080 minutes/week), moderate (1,080-1,440), or high (>1,440). Sedentary behaviour was estimated via the Physical Activity Scale for the Elderly (PASE). At follow-up, participants were dichotomized as either increased or decreased/no change in sedentary behaviour according to their categorical change between time points.

RESULTS: Sedentary behaviour was associated with fall-related injuries independently of age, sex, number of chronic conditions, and total physical activity levels OR (95%CI) 1.10 (1.05-1.15). In contrast, a change in sedentary behaviour was not associated with the risk of fall-related injury 1.00 (0.92-1.01).

CONCLUSION: A higher level of sedentary behaviour is associated with injurious falls for people between 40 and 80 years old. However, a short-term change in sedentary behaviour does not influence the risk of injury-related falls. Despite the results, a more precise measure of sedentary behaviour is needed for epidemiology studies to capture changes over time better.

Language: en

Keywords: CLSA; Fall-related injuries; Sedentary behaviour

Development of fewer falls in MS-an online, theory-based, fall prevention self-management programme for people with multiple sclerosis

Johnson ST, Ytterberg C, Peterson E, Johansson S, Kierkegaard M, Gottberg K, Flink M. Health Expect. 2024; 27(4): e14154.

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PMCID: PMC11259746

Abstract

OBJECTIVE: The aim of this study was to describe the process used to develop a theory-based, online fall prevention self-management programme for ambulatory and non-ambulatory people with multiple sclerosis (pwMS).

METHODS: The development process was guided by the Medical Research Council framework of complex interventions and began with a scoping review of the literature on self-management of falls in pwMS. Subsequent phases of development were performed through iterative and concurrent processes and were informed by the perspectives of pwMS and healthcare professionals with MS expertise.

RESULTS: Through a systematic and iterative process in close collaboration with pwMS and healthcare professionals, a theory-based online fall prevention self-management programme, Fewer Falls in MS, for ambulatory and non-ambulatory pwMS was developed. The programme is grounded in theory and pedagogical models and features utilization of action plans to address diverse influences on fall risks.

CONCLUSIONS: A carefully operationalized definition of self-management and an iterative co-development process were essential to the creation of the Fewer falls in MS programme. Continuation of the co-development process and collaboration with end users was needed to refine the programme. **PATIENT OR PUBLIC CONTRIBUTION:** PwMS and healthcare professionals were involved throughout the development process of the programme. The patient organization Neuro Sweden was contacted in the initial phase to discuss the relevance of a self-management programme to prevent falls in MS. They supported the research group (all authors) in identification of and contact with pwMS with interest to participate. Three members of the research group (S.T.J., M.F. and C.Y.), that is, the operative group, met neuro Sweden and one pwMS to further discuss the relevance of a self-management programme to prevent falls. To develop the process and content of the fall prevention programme, a co-design process was performed together with pwMS and healthcare professionals. The results of the co-design process are presented in this manuscript. In addition to participating in the co-design process, pwMS and healthcare professionals provided feedback to the research group on programme process and content on several occasions during the subsequent programme development process. In a pretest (Beta version) of the programme, four pwMS acted as test subjects and provided additional feedback on the programme to the research group. **TRIAL REGISTRATION:** NCT04317716.

Language: en

Keywords: Humans; Female; Male; Internet; *Accidental Falls/prevention & control; *Multiple Sclerosis/therapy; *Self-Management; action plan;

SafetyLit 30
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complex intervention development; end-user collaboration; group-based intervention;
multifactorial falls management; Program Development; Self Care

Changes in emergency department and inpatient encounters for falls after the onset of the COVID-19 pandemic

Lach HW, Salas J, Scherrer JF. *J. Appl. Gerontol.* 2024; ePub(ePub): ePub.

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DOI: 10.1177/07334648241266434

PMID: 39030725

Abstract

OBJECTIVE: This study investigates changes in clinical encounters due to falls before and after the onset of the COVID-19 pandemic.

METHODS: De-identified health record data from a large mid-western health system was used to examine the frequency of emergency department (ED) and inpatient (IP) encounters for falls by month among adults age 50+ (N = 485, 886 patients) using joinpoint regression analysis. Also, overall rates before and during the pandemic were compared using log-binomial models.

RESULTS: Fall rates increased following the onset of the COVID-19 pandemic for IP encounters but not for ED encounters. There were no differences by age, gender, race, or nSES. Monthly IP fall rates increased by 0.68% per month both before and after the onset of the COVID-19 pandemic.

CONCLUSION: Pandemics may occur in the future, and interventions are needed to prevent falls in older adults during the next public health emergency.

Language: en

Keywords: COVID-19; injuries; health disparities; falls; hospitalizations

Health literacy and falls among community-dwelling older people in China: is there a sex difference?

Li S, Wang J, Ren L, Ye P, Niu W, Yu M, Hu Y, Jiang Y, Wu Y, Tian M, Zhao Y, Yao Y. *Aging Clin. Exp. Res.* 2024; 36(1): e148.

(Copyright © 2024, Holtzbrinck Springer Nature Publishing Group)

DOI: 10.1007/s40520-024-02788-6

PMID: 39023697

Abstract

BACKGROUND: Health literacy is one of the important determinants of healthy aging, yet few studies have focused on the association between health literacy and falls. **AIMS:** This study aims to explore the relationship between health literacy and falls, with a focus on sex differences among older people in China.

METHODS: This cross-sectional study enrolled 2,144 older people aged ≥ 60 years from Shandong Province, China in 2021. We used general health literacy screening scale to assess health literacy, and collected the incidence of falls in the past year. Logistic regression models were employed to analyze the relationship between health literacy and falls. We investigated the sex differences by subgroup analyses.

RESULTS: The prevalence of adequate health literacy and falls was 21.7% (95% CI: 20.0-23.5%) and 25.4% (95% CI: 23.6-27.3%), respectively. In a fully-adjusted model, adequate health literacy was associated with a lower prevalence of falls in older adults (OR = 0.71, 95%CI: 0.52-0.96). Subgroup analysis revealed sex differences in this relationship (P(for interaction) <0.05). Specifically, the female group showed no significant relationship between health literacy and falls (OR = 0.92, 95% CI: 0.59-1.44); however, the male group demonstrated a robust and significant relationship (OR = 0.58, 95% CI: 0.37-0.90).

CONCLUSIONS: Older people with adequate health literacy have lower prevalence of falls, which appears to differ by sex. This relationship was significant among men but not among women. These findings emphasize the need for policymakers and healthcare providers to consider sex differences when designing and implementing programs aimed at improving health literacy and preventing falls in the older population. Improving health literacy among older women could be a strategic component in bridging sex inequality in falls.

Language: en

Keywords: Humans; Cross-Sectional Studies; Aged; Female; Male; Middle Aged; Sex Factors; Aged, 80 and over; Prevalence; Sex difference; *Independent Living; China/epidemiology; *Accidental Falls/statistics & numerical data/prevention & control; *Health Literacy; Cross-sectional study; Falls; Health literacy

Feasibility of an implementation strategy for preventing falls in homecare services

Linnerud S, Kvæl LAH, Bjerck M, Taraldsen K, Skelton DA, Brovold T. *Implement. Sci. Commun.* 2024; 5(1): e79.

(Copyright © 2024, Holtzbrinck Springer Nature Publishing Group - BMC)

DOI: 10.1186/s43058-024-00615-7

PMID: 39030646

Abstract

BACKGROUND: Falls among older adults represent a major health hazard across the world. In 2022, the World Falls Guidelines was published, summarising research evidence and expert recommendations on how to prevent falls, but we need more knowledge on how the evidence can be successfully implemented into routine practice. In this study we used an implementation strategy co-created by healthcare providers, older adults who had fallen and researchers, to facilitate uptake of fall prevention recommendations. This current study aimed to evaluate the feasibility of this co-created implementation strategy in homecare services and provide information on the intervention and measurements for a full-scale cluster-randomized trial.

METHODS: This study was a single-armed feasibility study with an embedded mixed-method approach completed in two city districts of Oslo, Norway, over a period of ten weeks. The co-created implementation strategy consists of a package for implementing national recommendations for preventing falls, empowering leaders to facilitate implementation, establish implementation teams, competence improvement and implementation support. City districts established implementation teams who were responsible for the implementation. Feasibility was assessed both qualitatively and quantitatively, using focus group interviews with implementation team members and individual interviews with leaders and staff members and the Feasibility of Intervention Measure (FIM). Qualitative data were analysed using thematic analysis and the Normalisation Process Theory.

RESULTS: Qualitative data were collected from 19 participants: 12 implementation team members, 2 leaders and 5 staff members. 8 of the implementation team members responded to FIM. The analysis revealed four themes: 1) Fostering consensus through tailored implementation and discussions on fall prevention, 2) The importance of multi-level and interdisciplinary collaboration in fall prevention implementation, 3) Minimizing perceived time usage through utilization of existing areas for implementation activities, and 4) Reflective monitoring demonstrates the importance of facilitation and structure in the implementation strategy. For FIM, there were a high level of agreement related to how implementable, possible, doable, and easy to use the implementation strategy was.

CONCLUSIONS: Overall, we found the implementation strategy to be feasible to enhance uptake of fall prevention recommendations in the Norwegian homecare services. To succeed with the implementation, a dedicated implementation team should receive support through the implementation process, they should choose small implementation activities to enhance fall prevention competence and managers should possess implementation knowledge. TRIAL

REGISTRATION: The trial is registered in the Open Science Registry:

<https://doi.org/10.17605/OSF.IO/2JFHV> Registered: January 11, 2023.

Language: en

Keywords: Older adults; Implementation science; Falls prevention; National recommendations; Process evaluation

Safe(r) landing by older people: a matter of complexity

Masters RSW, Uiga L. J. *Gerontol. A Biol. Sci. Med. Sci.* 2024; ePub(ePub): ePub.

(Copyright © 2024, Gerontological Society of America)

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Abstract

Maintaining balance is a complex motor problem that requires coordinated contributions from multiple biological systems. Aging inevitably lessens the fidelity of biological systems, which can result in an increased risk of falling, and associated injuries. It is advantageous to land safely, but falls manifest in diverse ways, so different motor solutions are required to land safely. However, without considerable practice, it is difficult to recall the appropriate motor solution for a fall and then apply it effectively in the brief duration before hitting the ground. A complex systems perspective provides a lens through which to view the problem of safe-landing. It may be possible to use motor analogies to promote degeneracy within the perceptual-motor system so that, regardless of the direction in which an older person falls, their body self-organizes to land with less likelihood of injury.

Language: en

Keywords: degeneracy; injury reduction; Motor analogies; unexpected falls

Reflections on the challenges of conducting an international multicentre randomized controlled trial of balance training in addition to pulmonary rehabilitation and its impact on fall incidence in people with COPD

Newman ANL, Beauchamp MK, Ellerton C, Goldstein R, Alison JA, Dechman G, Haines KJ, Harrison SL, Holland AE, Lee AL, Marques A, Spencer L, Stickland MK, Skinner EH, Camp PG, Kho ME, Brooks D. *Trials* 2024; 25(1): e487.

(Copyright © 2024, Holtzbrinck Springer Nature Publishing Group - BMC)

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PMID: 39020430

PMCID: PMC11256496

Abstract

BACKGROUND: Pulmonary rehabilitation (PR) is accepted as standard care for individuals with COPD. We conducted an international, multi-centred randomized controlled trial (RCT) to determine if adding balance training to PR would reduce the incidence of falls in people with COPD. While there have been many trials investigating the effectiveness of PR, few have involved international collaboration. Successful execution of rehabilitation trials requires a significant investment of time, staffing, and resources. With the recent completion of the Balance Training for Fall Reduction in COPD RCT, we report on the design, implementation, and execution of our trial using project management phases. We also highlight our lessons learned for consideration in future multi-centre rehabilitation trials.

METHODS: This was a retrospective review of the planning, preparation, timelines, and personnel training involved in the execution of this study using four of the five project management phases described by Farrell et al. in 2010: (1) initiation, (2) planning, (3) execution, and (4) monitoring and controlling. We report descriptive statistics as percentages and counts and summarize our lessons learned.

RESULTS: Ten outpatient PR programs in three continents participated. Thirty-one personnel worked on the trial across all sites. Enrolment began in January 2017 and was suspended in March 2020 due to the COVID-19 pandemic. Approximately 1275 patients were screened, 455 (36%) were eligible, 258 (57%) consented, 243 (53%) participated, and 130 (61%) completed the 12-month follow-up assessment. Lessons learned through our experience included (1) ensuring awareness of funder policies and considering the impact on collaborating sites; (2) preparing for the possibility of human resource and program disruptions; (3) anticipating site dropout and having a contingency plan in place; (4) planning and monitoring process measure data before, during, and after trial initiation; (5) ensuring frequent and consistent communication with and between collaborating sites; (6) maximizing features of database platform to ensure data set completeness and controlled data access; and (7) identifying strategies for increasing patient engagement in a high-demand study.

CONCLUSIONS: We identify seven lessons learned through our experience conducting an international, multicentre rehabilitation-based RCT. These lessons can provide guidance to other trialists conducting studies with similar logistics and may assist with future trial planning and implementation.

Language: en

Keywords: Humans; Incidence; Research Design; Retrospective Studies; Randomized Controlled Trials as Topic; Time Factors; Treatment Outcome; Multicenter Studies as Topic; *Accidental Falls/prevention & control;

SafetyLit 30
28 July 2024



*Postural Balance; *Pulmonary Disease, Chronic
Obstructive/rehabilitation/diagnosis/epidemiology; Balance training; Chronic obstructive
pulmonary disease (COPD); Exercise Therapy/methods; Project management; Pulmonary
rehabilitation; Randomized controlled trial

Identifying factors associated with post-hospital falls in older patients: a territory-wide cohort study

Qian XX, Chau PH, Fong DYT, Ho M, Woo J. Public Health 2024; 235: 1-7.

(Copyright © 2024, Elsevier Publishing)

DOI: 10.1016/j.puhe.2024.06.017

PMID: 39032191

Abstract

OBJECTIVES: Post-hospital falls impose a substantial healthcare burden on older adults, yet contributing factors remain inadequately examined. This study aimed to investigate underinvestigated factors associated with post-hospital falls. **STUDY DESIGN:** Retrospective territory-wide cohort study.

METHODS: We examined the electronic medical records of patients aged ≥ 65 who were discharged from public hospitals in Hong Kong (2007-2018). During the 12 months following discharge, participants were monitored to identify falls based on diagnosis codes or clinical notes from inpatient episodes, the emergency department (ED) visits, and death records. Falls were categorized into two groups: those only requiring ED visits and those requiring hospitalizations. Binary logistic and multinomial logistic regressions examined the associated factors for post-hospital falls and subcategories of falls, respectively.

RESULTS: Among 606,392 older patients, 28,593 (4.71%; 95% CI = 4.66%-4.77%) experienced falls within 12 months after discharge. Of those, 8438 (29.5%) only required ED visits, and 20,147 (70.5%) required hospitalizations. Discharge from non-surgical wards, length of stay over two weeks, receiving the Geriatric Day Hospital and Rehabilitation Day Program, advancing age, being female, having more comorbidities, taking more fall risk increasing drugs, previous admission for falls, and living in Hong Kong Island were associated with increased fall risk. Receiving allied health service or nurse service was associated with reduced risk. The same factors were more associated with falls requiring hospitalizations rather than falls only requiring ED visits.

CONCLUSIONS: Older patients with identified factors were particularly vulnerable to post-hospital falls leading to rehospitalizations. Fall risk assessment and tailored prevention should prioritize this group.

Language: en

Keywords: Fall-related ED visits; Fall-related rehospitalization; Novel factors

Balance recovery after trips is affected by the type of tripping obstacles

Qu X, Yang B, Wang W, Hu X. Ergonomics 2024; 1-7.

(Copyright © 2024, Informa - Taylor and Francis Group)

DOI: 10.1080/00140139.2024.2375749

PMID: 39017622

Abstract

Occupational falls are often initiated by trips. Mechanical perturbations applied onto the tripped foot are different for different types of tripping obstacles. The present study aimed to determine how different types of tripping obstacles affect balance recovery after trips. Sixty-four healthy adults participated in an experimental study. They were instructed to perform several walking trials, during which two trips were randomly induced, one by a pole-like obstacle and the other by a board-like obstacle. Balance recovery after trips was measured and compared between the two obstacles.

RESULTS showed that the board-like obstacle led to longer step-off time, shorter recovery step duration, and smaller minimum hip height, suggesting that the risk of trip-initiated falls could be higher with the board-like obstacle vs. the pole-like obstacle. This finding presents the need for future research to consider the influence of obstacle type when exploring mechanisms for trips and falls.

Language: en

Keywords: Falls; balance recovery; fall prevention; tripping obstacles; trips

The impact of misaligned perceived and objective fall risk in cognitively impaired older people

Taylor ME, Kerckhaert L, Close JCT, van Schooten KS, Lord SR. *J. Alzheimers Dis.* 2024; ePub(ePub): ePub.

(Copyright © 2024, IOS Press)

DOI: 10.3233/JAD-240489

PMID: 39031366

Abstract

BACKGROUND: Cognitive impairment (CI) may impair the ability to accurately perceive physical capacity and fall risk.

OBJECTIVE: We investigated perceived (measured as concern about falls) and physiological fall risk in community-dwelling older people with CI, the characteristics of the aligned and misaligned groups and the impact of misaligned perceptions on falls.

METHODS: Participants (n=293) with mild-moderate CI were classified into four groups based on validated physiological and perceived fall risk assessments: 1) vigorous: low perceived and physiological fall risk; 2) anxious: high perceived and low physiological fall risk; 3) unaware: low perceived and high physiological fall risk; and 4) aware: high perceived and physiological fall risk. Groups were compared with respect to neuropsychological and physical function, activity and quality of life measures, and prospective falls (12-months).

RESULTS: The anxious (IRR=1.70, 95% CI=1.02-2.84), unaware (IRR=2.00, 95% CI=1.22-3.26), and aware (IRR=2.53, 95% CI=1.67-3.84) groups had significantly higher fall rates than the vigorous group but fall rates did not significantly differ among these groups. Compared with the vigorous group: the anxious group had higher depression scores and reduced mobility and quality of life; the unaware group had poorer global cognition, executive function and mobility and lower physical activity levels; and the aware group had an increased prevalence of multiple physical and cognitive fall risk factors.

CONCLUSIONS: Fall rates were increased in participants who had increased perceived and/or physiological fall risk. Contrasting fall risk patterns were evident in those who under- and over-estimated their fall risk. Understanding these characteristics will help guide fall risk assessment and prevention strategies in community-dwelling older people with CI.

Language: en

Keywords: risk factors; aged; dementia; Accidental falls; Alzheimer's disease; cognitive dysfunction; fear of falling; perception

Sex differences in association of joint glycaemic, blood pressure and lipid control and two-year risk of falls among older adults with diabetes

Varghese NM, Varghese JS. *J. Diabetes Complications* 2024; 38(8): e108815.

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DOI: 10.1016/j.jdiacomp.2024.108815

PMID: 39024755

Abstract

AIMS: To characterize the risk of falls among males and females by joint glycaemic, blood pressure (BP) and cholesterol control among older adults (≥ 65 years) with diagnosed diabetes in USA.

METHODS: Using longitudinal data from the Health and Retirement Study (2006-2019), we studied the association of joint glycaemic (HbA1c < 7.5 %), BP (systolic < 140 and diastolic < 90 mmHg) and cholesterol (total < 200 mg/dL) control with two-year risk of falls. We estimated risk ratios (RR) to describe the associations for joint ABC control and independent biomarker control by sex, using modified Poisson regressions after adjusting for known individual and household risk factors.

RESULTS: The analytic sample consisted of 4509 observations from 2829 older adults (54.7 % female) with a mean age of 72.2 (SD: 6.6) years and duration of diabetes of 9.9 years. Joint ABC control was not associated with risk of falls among females but was associated with lower risk among males (0.91 [95%CI: 0.81-1.02]). Furthermore, achievement of glycaemic control (0.85 [95%CI: 0.73-0.98]) and BP control (0.89 [95%CI: 0.79-1.01]) were associated with lower risk but cholesterol control (1.15 [95%CI: 0.99, 1.34]) was associated with higher risk of falls among males.

CONCLUSIONS: Joint achievement of glycaemic, BP and cholesterol targets may prevent falls among older males. Future studies among people with diabetes should consider biomarker control as a preventive factor for falls.

Language: en

Keywords: Aging; Diabetes control; Microvascular complications

Fall risk associated with taxanes: focus on chemotherapy-induced peripheral neuropathy

Visovsky C, Wodzinski PT, Haladay D, Ji M, Coury J. *Semin. Oncol. Nurs.* 2024; ePub(ePub): ePub.

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PMID: 39013733

Abstract

OBJECTIVES: Chemotherapy-induced peripheral neuropathy (CIPN) remains a significant toxicity for women with breast cancer receiving taxane-based treatment. This analysis has been done within the context of an ongoing 16-week randomized clinical trial consisting of a gait, balance, and strength training exercise intervention for the lower extremities in women with persistent CIPN who received taxane-based chemotherapy for breast cancer. The aim of this analysis is to determine the baseline fall risk among 62 study participants with persistent taxane-induced CIPN assigned to the control group.

METHODS: This analysis used the baseline demographic, medical data, nerve conduction, gait, balance, and muscle strength variables of participants prior to randomization to develop an explanatory model of fall risk. The analytic approach utilized generalized linear modeling with Lasso to select baseline risk factors for future falls.

RESULTS: Characteristics of the study sample by intervention and control group revealed no significant differences between the groups at baseline. The only baseline risk factors that were significantly associated with future falls were near falls within the last month ($\beta = 0.90$, $P = .056$) with an odds ratio = 2.46, 95% confidence interval 0.31 to 17, and right ankle plantar flexion torque. ($\beta = 0.05$, $P = .006$) with an odds ratio = 1.05, 95% confidence interval 1.01 to 1.10. Demographic and medical data, nerve conduction parameters, gait, balance, or muscle strength variables did not significantly influence fall risk in this population.

CONCLUSIONS: The potential for injury and disability from falls is a considerable concern among oncology clinicians and women with breast cancer and persistent CIPN. While falls and fall risk have been previously examined in other studies of breast cancer survivors, the majority of studies fail to capture the occurrence of "near falls" a significant predictor of fall risk. In addition, it is possible that ankle strength may prove to be a potential target for fall prevention in this population. Evidence-based interventions focused on improving neuropathic symptoms, physical function, and quality of life in persons with CIPN are still needed. **IMPLICATION FOR NURSING PRACTICE:** Oncology nurses and nurse practitioners should query patients who received taxane-based chemotherapy for not only the incidence and frequency of falls but the occurrence of near falls. A prompt referral to physical therapy may be useful in strengthening the lower extremities to improve balance and prevent falls.

Language: en

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28 July 2024

Keywords: Breast Cancer; CIPN; Fall Risk

Risk factors of falls in rural elderly of Ningxia in China: a prospective cohort study

Wang Q, Wang G, Wang B, Li X, Liu X, Yin T, Jing J, Zhao Y. *Inj. Prev.* 2024; ePub(ePub): ePub.

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PMID: 39025671

Abstract

OBJECTIVES: To identify risk factors associated with falls in older people in rural China.

METHODS: A prospective cohort study was conducted across 27 villages in the rural areas of Ningxia, China. After excluding individuals younger than 60 years, a total of 758 out of the initial 822 participants were ultimately included for the collection of baseline information. Participants were followed up through telephone calls or face-to-face interviews at 3rd, 6th and 12th months following the baseline investigation. The Cox proportional hazards regression model was used to examine risk factors of falls.

RESULTS: A total of 758 participants underwent baseline information surveys, and all samples were included in the Cox model analysis. The study found that being woman (RR=1.879, 95% CI: 1.313 to 2.668), smoking (RR=1.972, 95% CI: 1.238 to 3.143), use of painkillers (RR=1.700, 95% CI: 1.226 to 2.356) and higher systolic blood pressure (SBP) (RR=1.081, 95% CI: 1.013 to 1.154) were associated with higher risk of falls among the elderly in rural China. After excluding those who were lost to follow-up or deceased, 738 participants completed the follow-up. There were 341 men (46.2%) and 397 women (53.8%), with an average age of 66.8±5.0 years. The fall rate in study area was 23.8% during the follow-up period.

CONCLUSIONS: The fall rate among the elderly in rural China was higher than other areas. Our findings revealed that being woman, smoking, medication usage, elevated SBP and people with a higher body mass index were risk factors for developing falls.

Language: en

Keywords: Rural; Longitudinal; Risk Factor Research

Priority interventions for the prevention of falls or fractures in patients with osteoporosis: A network meta-analysis

Wei S, He Y, Liu K, Wang R, Wang Y. Arch. Gerontol. Geriatr. 2024; 127: e105558.

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Abstract

BACKGROUND: The fractures of patients with osteoporosis represent a major health care burden that requires efficient prevention.

OBJECTIVE: To analyze the efficacy and significance of diverse interventions for preventing falls or fractures in patients with osteoporosis, and to establish a foundation for clinical interventions.

METHODS: Ten databases were searched for studies published before January 30, 2024. Screening, data extraction, and risk of bias assessment were independently conducted by two researchers using Stata 14.0 software. A network meta-analysis using the frequentist framework was then performed to determine the effectiveness of various interventions for preventing and managing falls and fractures in patients with osteoporosis. The findings were used as basis for the prioritization of interventions.

RESULTS: The initial search yielded 3894 studies. After 3878 studies were excluded, 16 studies were finally included. For the prevention of falls in patients with osteoporosis, effective interventions include exercise and exercise plus medication. A combination of exercise, assessment and modifications, quality improvement strategies, social engagement, basic falls risk assessment, and assistive technology may be the preferred recommended intervention. For the prevention of fractures in patients with osteoporosis, no statistically significant disparities were observed among the compared interventions, exercise may be the preferred recommended intervention.

CONCLUSION: Exercise and exercise plus medication are effective in reducing the number of falls in patients with osteoporosis. Although exercise may be the optimal intervention for fracture prevention, the quality of current evidence remains inadequate. Large-scale high-quality randomized controlled trials are necessary to substantiate these findings. **TRIAL REGISTRATION:** PROSPERO CRD42024507487.

Language: en

Keywords: Fall; Fracture; Network meta-analysis; Osteoporosis

Pain medication frequency and fall risk among community-dwelling older adults with arthritis

Yoshikawa A, Fortinsky RH. *J. Appl. Gerontol.* 2024; e7334648241261425.

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Abstract

Pain medication is commonly used among older adults with arthritis, elevating the risk of falling. We examined fall risks related to the frequency of taking pain medication among community-dwelling older adults with arthritis by analyzing a nationally representative sample of community-dwelling Medicare beneficiaries aged >65 with self-reported arthritis (n = 4,225) in the 2015 National Health and Aging Trends Study. The survey-weighted logistic regression revealed that after controlling for confounding factors, recent falls were associated with taking pain medication daily compared to never (OR = 1.45, 95% CI: 1.06, 1.96). The other categories of medication frequency, compared to never, were not associated with fall risk.

FINDINGS suggest that more prudent use of pain medication should be stressed by health care providers for older adults with arthritis to help reduce the risk of falls and fall injuries. Nonpharmacological pain management is encouraged to support active living among older adults with arthritis.

Language: en

Keywords: injuries; arthritis; falls; frailty; pain management; population-based study

How do care partners overcome the challenges associated with falls of community-dwelling older people with dementia? A qualitative study

Zhou Y, Thakkar N, Phelan EA, Ishado E, Li CY, Borson S, Sadak T. *Dementia* (London) 2024; ePub(ePub): ePub.

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Abstract

BACKGROUND AND OBJECTIVES: Previous studies have found that falls among community-dwelling older people with dementia negatively impact the health and well-being of their relative/friend care partners. Limited studies have explored the challenges care partners experience because of older people's falls (including fall incidents and fall risks). We sought to investigate care partners' experiences of these challenges and how care partners responded.

METHODS: We conducted an inductive thematic analysis of 48 dementia care partner interviews (age range: 33-86, mean: 61, 70.8% women; 58.3% adult children; 29.2% spouse; 62.5% completed college; 25% people of color), conducted after a health crisis of older people with dementia from three local university-affiliated hospitals in the United States.

FINDINGS: Care partners reported that falls in older people with dementia can intensify overall care demands and lead to self-sacrificing behaviors, dissatisfaction with healthcare providers, conflicts with care recipients, and intense emotions. Care partners described several adaptations to mitigate these impacts, including practicing acceptance, approaching falls as an opportunity for learning, facilitating collaborations within formal/informal care networks, collaborating with older people with dementia to balance autonomy and safety, and modifying the physical environment.

DISCUSSIONS AND IMPLICATIONS: Falls among older people with dementia are a significant stressor and an important activation stimulus for their care partners. Our findings suggest that care partners are "second clients" and "competent collaborators." As they provide important insights about fall prevention, care partners should be engaged to co-design new multi-level interventions to facilitate collaborations among care networks, older people with dementia, and service providers.

Language: en

Keywords: aged; caregiving; fall prevention; cognitive impairment; lived experience