

A quantitative study on the impact of a community falls pharmacist role, on medicines optimisation in older people at risk of falls

Crawford P, Plumb R, Burns P, Flanagan S, Parsons C. BMC Geriatr. 2024; 24(1): e604.

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

DOI: 10.1186/s12877-024-05189-6

PMID: 39009970

PMCID: PMC11251379

Abstract

BACKGROUND: The World Falls guidance includes medication review as part of its recommended multifactorial risk assessment for those at high risk of falling. Use of Falls Risk Increasing Drugs (FRIDs) along with polypharmacy and anticholinergic burden (ACB) are known to increase the risk of falls in older people.

METHOD: The impact of a community falls pharmacist within a hospital Trust, working as part of a multi-professional community falls prevention service, was evaluated in 92 people aged 65 years or older, by analysing data before and after pharmacist review, namely: number and type of FRIDs prescribed; anticholinergic burden score using ACBcalc(®); appropriateness of medicines prescribed; bone health review using an approved tool; significance of clinical intervention; cost avoidance, drug cost savings and environmental impact.

RESULTS: Following pharmacist review, there was a reduction in polypharmacy (mean number of medicines prescribed per patient reduced by 8%; $p < 0.05$) and anticholinergic burden score (average score per patient reduced by 33%; $p < 0.05$). Medicines appropriateness improved (Medicines Appropriateness Index score decreased by 56%; $p < 0.05$). There were 317 clinically significant interventions by the community falls pharmacist. One hundred and one FRIDs were deprescribed. Annual cost avoidance and drug cost savings were £40,689-£82,642 and avoidable carbon dioxide (CO₂) emissions from reducing inappropriate prescribing amounted to 941 kg CO₂.

CONCLUSION: The community falls pharmacist role increases prescribing appropriateness in the older population at risk of falls, and is an effective and cost-efficient means to optimise medicines in this population, as well as having a positive impact on the environment.

Language: en

Keywords: Humans; Risk Factors; Aged; Female; Male; Older people; Aged, 80 and over; *Accidental Falls/prevention & control/economics; *Pharmacists; *Professional Role; Community Pharmacy Services; Deprescribing; Falls Risk increasing drugs (FRIDs); Medicines optimisation; Polypharmacy; Risk Assessment/methods

A systematic review of fall prediction models for community-dwelling older adults: comparison between models based on research cohorts and models based on routinely collected data

Dormosh N, van de Loo B, Heymans MW, Schut MC, Medlock S, van Schoor NM, van der Velde N, Abu-Hanna A. *Age Ageing* 2024; 53(7).

(Copyright © 2024, Oxford University Press)

DOI: 10.1093/ageing/afae131

PMID: 38979796

PMCID: PMC11231951

Abstract

BACKGROUND: Prediction models can identify fall-prone individuals. Prediction models can be based on either data from research cohorts (cohort-based) or routinely collected data (RCD-based). We review and compare cohort-based and RCD-based studies describing the development and/or validation of fall prediction models for community-dwelling older adults.

METHODS: Medline and Embase were searched via Ovid until January 2023. We included studies describing the development or validation of multivariable prediction models of falls in older adults (60+). Both risk of bias and reporting quality were assessed using the PROBAST and TRIPOD, respectively.

RESULTS: We included and reviewed 28 relevant studies, describing 30 prediction models (23 cohort-based and 7 RCD-based), and external validation of two existing models (one cohort-based and one RCD-based). The median sample sizes for cohort-based and RCD-based studies were 1365 [interquartile range (IQR) 426-2766] versus 90 441 (IQR 56 442-128 157), and the ranges of fall rates were 5.4% to 60.4% versus 1.6% to 13.1%, respectively. Discrimination performance was comparable between cohort-based and RCD-based models, with the respective area under the receiver operating characteristic curves ranging from 0.65 to 0.88 versus 0.71 to 0.81. The median number of predictors in cohort-based final models was 6 (IQR 5-11); for RCD-based models, it was 16 (IQR 11-26). All but one cohort-based model had high bias risks, primarily due to deficiencies in statistical analysis and outcome determination.

CONCLUSIONS: Cohort-based models to predict falls in older adults in the community are plentiful. RCD-based models are yet in their infancy but provide comparable predictive performance with no additional data collection efforts. Future studies should focus on methodological and reporting quality.

Language: en

Keywords: Humans; Risk Factors; Aged; Female; Male; accidental falls; systematic review; Age Factors; Risk Assessment; Aged, 80 and over; Reproducibility of Results; older people; Predictive Value of Tests; Models, Statistical; electronic health records; prediction models; *Accidental Falls/statistics & numerical data; Geriatric

SafetyLit 29
21 July 2024

Assessment/methods; *Independent Living/statistics & numerical data; geriatric medicine; prospective cohorts; risk stratification tools; routinely collected data

Prevalence of older hospitalised adults with sustained fractures after a fall in regional Australian hospitals

Holden E, Devin R, Bhattacharya J, Waldie F, Watt I, Wu CJJ. *Healthcare (Basel)* 2024; 12(13).

(Copyright © 2024, MDPI: Multidisciplinary Digital Publishing Institute)

DOI: 10.3390/healthcare12131318

PMID: 38998853

PMCID: PMC11241256

Abstract

Falls commonly occur in hospitals, particularly among older adults. Fractures in the older population can cause major morbidity, which can result in long hospital admissions and increased care costs. This study aimed to characterise the demographics of patients aged 65 years and over who fell in hospital and to determine the type of fractures they sustained. A descriptive study was undertaken to examine hospital data of older inpatients who had a fall during admission in two regional Queensland hospitals in Australia over a 2.5-year period. The prevalence of inpatient falls was 1.28%. Most falls were unwitnessed (77.34%) and they had an average of seven medical comorbidities. The mean age was 80.4 years and 63% were male. Women who fell were significantly older than men ($p = 0.004$). The mean length of stay of in-hospital fallers was 22.77 days and same admission mortality was 9.3%. Thirty-three fall events (3.8%) resulted in fractures, some with multiple injuries. The most common fracture was neck of femur, followed by rib, femur, and facial fractures. In conclusion, this study identifies the incidence of falls increased with age, most falls were unwitnessed, as well as provides evidence that patients with falls had multiple comorbidities and long hospital admissions. The data could be used to optimise fall prevention strategies and to refine post-fall assessment pathways.

Language: en

Keywords: older people; fall; regional hospital

Aberrant decision-making as a risk factor for falls in aging

Jain S, Schweighofer N, Finley JM. *Front. Aging Neurosci.* 2024; 16: e1384242.

(Copyright © 2024, Frontiers Research Foundation)

DOI: 10.3389/fnagi.2024.1384242

PMID: 38979111

PMCID: PMC11229407

Abstract

Neuromotor impairments resulting from natural aging and aging-related diseases are often accompanied by a heightened prevalence of falls and fall-related injuries. Conventionally, the study of factors contributing to falls focuses on intrinsic characteristics, such as sensorimotor processing delays and weakness, and extrinsic factors, such as environmental obstacles. However, the impact of these factors only becomes evident in response to people's decisions about how and where they will move in their environment. This decision-making process can be considered a behavioral risk factor, and it influences the extent to which a person engages in activities that place them near the limits of their capacity. While there are readily available tools for assessing intrinsic and extrinsic fall risk, our understanding of how to assess behavioral risk is limited. Measuring behavioral risk requires a systematic assessment of how people make decisions when walking in complex environments and how these decisions relate to their functional capacity. We propose that experimental methods and computational models derived from behavioral economics can stimulate the development of such assessments. Behavioral economics relies on theoretical models and empirical studies to characterize the factors that influence how people make decisions under risky conditions where a given decision can have variable outcomes. Applying a behavioral economic approach to walking can provide insight into how internal assessment of one's fall risk influences the tasks that one is willing to perform. Ultimately, these assessments will allow us to identify people who make choices that increase their likelihood of fall-related injuries.

Language: en

Keywords: aging; locomotion; gait; falls; decision-making; risk-taking

Using tele-paramedicine to conduct in-home fall risk reduction after emergency department discharge: Preliminary data

Jiang LG, McGinnis C, Benton E, Nawa E, Stern M, Xi W, Sharma R, Daniels B. J. Am. Geriatr. Soc. 2024; ePub(ePub): ePub.

(Copyright © 2024, John Wiley and Sons)

DOI: 10.1111/jgs.19080

PMID: 38979847

Abstract

BACKGROUND: Older adults discharged from our emergency department (ED) do not receive comprehensive fall risk evaluations. We conducted a quality improvement project using an existing Community Tele-Paramedicine (CTP) program to perform in-home fall risk assessment and mitigation after ED discharge.

METHODS: High falls-risk patients, as defined by STEADI score >4, were referred for a CTP home visit by community paramedics supervised virtually by emergency physicians. Home hazards assessment, Timed Up and Go test (TUG), medication reconciliation, and psychosocial evaluation were used to develop fall risk mitigation plans. Outcomes assessed at 30 days post ED-discharge included: completed CTP visits, falls, ED revisits, hospital admissions, and referrals.

RESULTS: Between November 2022 and June 2023, 104 (65%) patients were discharged and referred to CTP. The mean age of enrolled patients was 80 years, 66% were female, 63% White, 79% on Medicare or Medicaid, most lived with a family member (50%) or alone (38%). Sixty-one (59%) patients received an initial CTP visit, 48 (79%) a follow-up visit, and 12 (11%) declined a visit. Abnormal TUG tests (74%), home hazards (67%), high-risk medications (36%), or need for outpatient follow-up (49%) or additional home services (41%) were frequently identified. At 30 days, only one of the CTP patients reported a fall, one patient had a fall-related ED visit, and one patient was admitted secondary to a fall.

CONCLUSIONS: A quality improvement initiative using CTP to perform fall risk reduction after ED discharge identified areas of risk mitigation in the home where most falls take place. Further controlled studies are needed to assess the impact of CTP on clinical outcomes important to patients and health systems.

Language: en

Keywords: emergency medicine; community paramedicine; high-risk fall reduction; mobile integrated health; STEADI

Identifying determinants for falls among Iranian older adults: insights from the Bushehr Elderly Health Program

Khalagi K, Hoveidaei AH, AziziKia H, Karimi A, Sattarpour R, Fahimfar N, Sanjari M, Mansourzadeh MJ, Nabipour I, Larijani B, Ostovar A. BMC Geriatr. 2024; 24(1): e588.

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

DOI: 10.1186/s12877-024-05180-1

PMID: 38982344

Abstract

BACKGROUND: Falls are a common cause of fractures in older adults. This study aimed to investigate the factors associated with spontaneous falls among people aged ≥ 60 years in southern Iran.

METHODS: The baseline data of 2,426 samples from the second stage of the first phase of a prospective cohort, the Bushehr Elderly Health (BEH) program, were included in the analysis. A history of spontaneous falls in the year before recruitment was measured by self-report using a standardized questionnaire. Demographic characteristics, as well as a history of osteoarthritis, rheumatoid arthritis, low back pain, Alzheimer's disease, epilepsy, depression, and cancer, were measured using standardized questionnaires. A tandem gait (heel-to-toe) exam, as well as laboratory tests, were performed under standard conditions. A multiple logistic regression model was used in the analysis and fitted backwardly using the Hosmer and Lemeshow approach.

RESULTS: The mean (standard deviation) age of the participants was 69.34 (6.4) years, and 51.9% of the participants were women. A total of 260 (10.7%, 95% CI (9.5-12.0%)) participants reported a spontaneous fall in the year before recruitment. Adjusted for potential confounders, epilepsy (OR = 4.31), cancer (OR = 2.73), depression (OR = 1.81), low back pain (OR = 1.79), and osteoarthritis (OR = 1.49) increased the risk of falls in older adults, while the ability to stand ≥ 10 s in the tandem gait exam (OR = 0.49), being male (OR = 0.60), engaging in physical activity (OR = 0.69), and having high serum triglyceride levels (OR = 0.72) reduced the risk of falls.

CONCLUSION: The presence of underlying diseases, combined with other risk factors, is significantly associated with an increased risk of falls among older adults. Given the relatively high prevalence of falls in this population, it is crucial to pay special attention to identifying and addressing these risk factors.

Language: en

Keywords: Humans; Risk Factors; Aged; Female; Male; Middle Aged; Risk factors; Prospective Studies; Aged, 80 and over; Iran; Cohort Studies; Falls; Older adults; *Accidental Falls/prevention & control; Accidental falls; Iran/epidemiology

Impact of documented fall-risk, self-reported health and confidence to prevent falls on concern about falling among community-dwelling older adults: secondary analysis of a randomized clinical trial

Kiyoshi-Teo H, De Lima B, Dieckmann NF, Vincenzo JL, Eckstrom E. Clin. Interv. Aging 2024; 19: 1273-1280.

(Copyright © 2024, Dove Press)

DOI: 10.2147/CIA.S453789

PMID: 39011313

PMCID: PMC11249068

Abstract

PURPOSE: Individuals identified as high fall risk are expected to have high concern about falling. However, perception and individual factors that influence concern about falling have yet to be thoroughly studied. We aimed to understand factors that influence concern about falling among older adults with increased risk for falling.

PATIENTS AND METHODS: This was a secondary analysis of a clinical trial among community-dwelling older adults (age ≥ 65 years old) at high risk for falls ($n = 178$). Descriptive and regression analyses were used. We analyzed the relationship between participants' baseline concern about falling - categorized into three groups: low (7-8), moderate (9-13), and high (≥ 14) - and factors that may impact their concern. Exploratory factors included age, sex, self-reported health status and confidence to address fall risks, fall risk scores, and physical performance measures.

RESULTS: Among these individuals, 15.2% reported low concern about falling. On average, individuals in higher concern about falling groups had higher fall risk scores (low [5.7], moderate [6.4], and high [8.0]; $p < 0.001$). Our regression model showed that the odds of being in a higher concern group increased by 21% for every one unit increase in fall risk score and increased by 67% for every one unit increase toward poorer health rating. Conversely, for every one unit increase in self-reported confidence, the odds of being in a higher concern group decreased by 27.5%.

CONCLUSION: Knowledge of older adults' fall risk, health status, and concerns about falling can be used to assist in the personalization of fall prevention interventions for a more holistic approach.

Language: en

Keywords: Humans; Risk Factors; Aged; Female; Male; accidental falls; *Health Status; risk factors; Risk Assessment; Aged, 80 and over; *Accidental Falls/prevention & control; *Independent Living; *Self Report; Geriatric Assessment; perception; regression analysis

Activity and participation are associated with future falls, hospitalizations, and emergency visits in community-dwelling older adults

Klatt BN, Perera S, Dunlap PM, Rosso AL, Brach JS. Phys. Ther. 2024; ePub(ePub): ePub.

(Copyright © 2024, American Physical Therapy Association)

DOI: 10.1093/ptj/pzae087

PMID: 38993047

Abstract

OBJECTIVE: Activity and participation are important for older adults as they are associated with well-being and quality of life. Falls, emergency department (ED) visits, and hospitalizations are adverse health outcomes that impact older adults. Limited research has investigated whether measurement of activity and participation are related to adverse health events in community dwelling older adults. This study sought to examine the association between activity and participation with falls, ED visits, and hospitalization over 1 year in community dwelling older adults.

METHODS: A secondary analysis of a longitudinal clinical trial of 341 community dwelling older adults was conducted. The sample mean age was 80.9 (SD = 7.7) years and 83% were female. One-year risk of falls was associated with baseline Late Life Function and Disability Instrument (LLFDI) components of overall function and disability (frequency and limitations dimensions). Incident rate ratios (IRRs) and 95% CIs were calculated.

RESULTS: For each 5-point higher score (clinically meaningful difference) in activity as measured by LLFDI-overall function (adjusted for age, race, sex, comorbidities and fall history), there was an 18% lower rate of falls (IRR = 0.82, 95% CI = 0.74-0.92); 12% reduction in hospitalizations (IRR = 0.88; 95% CI = 0.77-0.99); and 11% lower rate of emergency room visits (IRR = 0.89, 95% CI = 0.81-0.98). Greater participation as measured by the LLFDI limitations dimension was related to fewer falls (IRR = 0.93, 95% CI = 0.87-1.00) and hospitalizations (IRR = 0.91, 95% CI = 0.83-0.99).

CONCLUSION: Greater activity and participation are associated with a lower incidence of falls, ED visits, and hospitalizations representing an important consideration for targeted physical therapist interventions. **IMPACT STATEMENT:** Physical therapists are uniquely positioned to identify and address reduced activity and participation. If activity and participation are specifically targeted and improved through physical therapy, undesirable distal health outcomes might be prevented or minimized.

Language: en

Keywords: Falls; Participation; Activity

The interactive walkway provides fit-for-purpose fall-risk biomarkers in the elderly: comparison of zolpidem and suvorexant

Koopmans I, Geerse D, de Ridder L, Roerdink M, Juachon MJ, Muehlan C, Dingemanse J, van Gerven J, Groeneveld GJ, Zuiker R. *Clin. Transl. Sci.* 2024; 17(7): e13875.

(Copyright © 2024, John Wiley and Sons)

DOI: 10.1111/cts.13875

PMID: 38978326

PMCID: PMC11231031

Abstract

Dynamic balance assessments such as walking adaptability may yield a more realistic prediction of drug-induced falls compared with postural stability measurements, as falls often result from limited gait adjustments when walking. The Interactive Walkway (IWW) measures walking adaptability but sensitivity to medication effects is unknown. If proven sensitive and specific, IWW could serve as a biomarker for targeted fall-risk assessments in early clinical drug development. In this three-way crossover study, 18 healthy elderly (age: 65-80 years) subjects received 5mg zolpidem, 10 mg suvorexant, or placebo in the morning. Assessments were performed pre-dose and approximately hourly until 9h post-dose. IWW assessments included an 8-meter walking test, goal-directed stepping, obstacle-avoidance, and tandem-walking. Other pharmacodynamic measurements were the Timed-Up-and-Go (TUG) test at a comfortable and fast pace, adaptive tracking, and body sway. A decline in performance was observed for zolpidem compared with placebo for 3 h post-dose in IWW walking adaptability outcome measures, TUG, adaptive tracking, and body sway. For the IWW tasks, a decrease in walking speed (among others) was observed. IWW parameters were not affected by suvorexant compared with placebo at any timepoint. However, an increase of 9.8% (95%CI: 1.8%, 18.5%) in body sway was observed for suvorexant compared with placebo up to 3 h post-dose. The IWW successfully quantified drug effects of two hypnotic drugs and distinguished between zolpidem and suvorexant regarding their effects on walking. As a biomarker, the IWW demonstrated sensitivity in assessing dynamic balance and potential fall risk in early phase clinical drug development.

Language: en

Keywords: Humans; Aged; Female; Male; Aged, 80 and over; Biomarkers; Double-Blind Method; *Accidental Falls/prevention & control; *Cross-Over Studies; *Walking/physiology; Risk Assessment/methods; *Azepines/administration & dosage/adverse effects; *Postural Balance/drug effects/physiology; *Triazoles/administration & dosage/adverse effects; *Zolpidem/administration & dosage/adverse effects; Pyridines/administration & dosage/adverse effects

Postural stability as a measure of fall risk in older people with and without HIV

Masters MC, Campbell LM, Yu J, Heaton A, Erlandson KM, Garudadri H, Nguyen T, Moore DJ, Moore RC. AIDS Res. Hum. Retroviruses 2024; ePub(ePub): ePub.

(Copyright © 2024, Mary Ann Liebert Publishers)

DOI: 10.1089/AID.2024.0046 **PMID:** 38973466

Abstract

INTRODUCTION: As the number of older people with HIV (PWH) grows, accidental falls and their associated negative health outcomes are of increasing concern. Fall risk can be measured using novel screening tools such as evaluating postural stability using force plate technology. The aims of this study were to test this technology to assess fall risk among older PWH.

METHODS: In a cross-sectional, observational study of people with and without (PWoH) with a range of fall risk, participants underwent balance assessment using the validated BTrackS balance plate. Postural stability was compared by HIV serostatus. Multivariable linear regressions were used to examine the relationship between postural stability and validated measures of fall risk balance and frailty status.

RESULTS: Among 34 PWH and 30 PWoH, all ≥ 50 years, postural stability was worse among PWH (35.4 cm vs 28.3 cm, $p = 0.07$). In multivariable models, worse postural stability was associated with reporting a fall in the past 6 months ($\beta = 0.32$, $p = 0.004$), worse fall efficacy ($\beta = 0.45$, $p < 0.001$), and being frail or pre-frail ($\beta = 0.26$, $p = 0.027$). In multivariable models stratified by HIV serostatus, worse postural stability was significantly associated with worse fall efficacy ($\beta = 0.53$, $p < 0.01$) and lower balance confidence ($\beta = -0.33$, $p = 0.04$) among PWH but not PWoH.

CONCLUSION: Among older PWH and PWoH, worse postural stability was associated with validated measures of fall risk, including history of falls and poorer falls efficacy. Assessment of postural sway is a promising objective screening test for fall risk among older PWH.

Language: en

Circular walking is useful for assessing the risk of falls in early progressive supranuclear palsy

Ohara M, Hirata K, Matsubayashi T, Chen Q, Shimano K, Hanazawa R, Hirakawa A, Yokota T, Hattori T. *J. Neurol.* 2024; ePub(ePub): ePub.

(Copyright © 2024, Holtzbrinck Springer Nature Publishing Group)

DOI: 10.1007/s00415-024-12551-6

PMID: 39009736

Abstract

BACKGROUND: Progressive supranuclear palsy (PSP) is characterized by early onset postural instability and frequent falls. Circular walking necessitates dynamic postural control, which is impaired in patients with PSP. We aimed to explore gait parameters associated with the risk of falls in patients with PSP, focusing on circular walking.

METHODS: Sixteen drug-naïve patients with PSP, 22 drug-naïve patients with Parkinson's disease (PD), and 23 healthy controls were enrolled. Stride lengths/velocities and their coefficients of variation (CV) during straight and circular walking (walking around a circle of 1-m diameter) were measured under single-task and cognitive dual-task conditions. Correlation analysis was performed between gait parameters and postural instability and gait difficulty (PIGD) motor subscores, representing the risk of falls.

RESULTS: Patients with PSP had significantly higher CVs of stride lengths/velocities during circular walking than those during straight walking, and the extent of exacerbation of CVs in patients with PSP was larger than that in patients with PD under single-task conditions. Stride lengths/velocities and their CVs were significantly correlated with PIGD motor subscores in patients with PSP only during single-task circular walking. In addition, patients with PSP showed progressive decrements of stride lengths/velocities over steps only during single-task circular walking.

CONCLUSIONS: Worse gait parameters during circular walking are associated with an increased risk of falls in patients with PSP. Circular walking is a challenging task to demand the compromised motor functions of patients with PSP, unmasking impaired postural control and manifesting sequence effect. Assessing circular walking is useful for evaluating the risk of falls in patients with early PSP.

Language: en

Keywords: Circular gait; Gait analysis; Postural instability; Progressive supranuclear palsy; Sequence effect

Participation and Outcomes of a community-based fall prevention program before, during and after COVID-19 pandemic

Raja B, Oza P. Pac. J. Health (Stockt) 2024; 7(1): e7.

(Copyright © 2024, University of the Pacific)

DOI: 10.56031/2576-215X.1031

Abstract

Introduction: Several community education programs aim to minimize risk of falling in community-dwelling older adults. However, due to the covid-19 pandemic most of these programs stopped or were delivered virtually. A matter of balance (MOB) is one such program that was delivered virtually during pandemic. The purpose of this study is to assess the differences in outcomes between in-person and virtual MOB program in San Joaquin County of California.

Methods: Participants were recruited from the community. Each MOB course ran for 8 sessions in-person or 9 sessions in the virtual format. A retrospective analysis was conducted on deidentified pre-post survey data of the participants that completed the survey questions.

Results: Survey completion rates were higher during in-person MOB. Females and individuals of white race were majority of the participants. Overall, both in person and virtual MOB program were successful in increasing confidence related to fear of falling, fall risks and physical strength. Participants in all groups reported improved quality of life.

Discussion: This study provides evidence that MOB can be effectively delivered virtually with some additional orientation to technology. Given the decreased survey responses, more regular check-ins with the participants by phone could ensure better return rate on the surveys.

Sleep quality and falls in middle-aged and older adults: ELSI-Brazil study

Santos APD, Cordeiro JFC, Abdalla PP, Bohn L, Sebastião E, Silva LSL, Tasinafo Júnior MF, Venturini ACR, Andaki ACR, Mendes EL, Marcos-Pardo PJ, Mota J, Machado DRL. Rev. Esc. Enferm. USP 2024; 58: e20240027.

(Copyright © 2024, Universidade de São Paulo, Escola de Enfermagem)

DOI: 10.1590/1980-220X-REEUSP-2024-0027en

PMID: 38995077

Abstract

OBJECTIVE: To verify the association between low self-reported sleep quality (LSQ) and fall in middle-aged and older adults every half-decade of life.

METHOD: A cross-sectional study was conducted using data from the first wave (2015-2016) of the Brazilian Longitudinal Study of Aging (ELSI-Brazil), which is nationally representative. The sample consisted of 8,950 participants who were allocated into eight age groups: 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, and ≥ 85 years. The questionnaires used included self-reported sleep quality and the International Physical Activity Questionnaire short version. Fisher's exact test followed by binary logistic regression analysis was performed to identify the odds ratio of sleep quality for fall occurrence, controlled for confounding variables.

RESULTS: Individuals aged 50-105 years (63.6 ± 10.2 years), 57.0% females and 43.0% males, participated in this study. Overall, 21.5% of participants experienced at least one fall. The relative frequency of participants classified as having high or LSQ remained constant across each half-decade of life. The LSQ exhibited a statistically significant OR ($p < 0.05$) for falls across age groups up to 84, even after accounting for confounding variables.

CONCLUSION: LSQ is significantly associated with an increased occurrence of fall in adults aged >50 years, but not for ≥ 85 years regardless of sex and physical activity level.

Language: en

Keywords: Humans; Cross-Sectional Studies; Aged; Female; Male; Middle Aged; Brazil; Age Factors; Aged, 80 and over; Surveys and Questionnaires; Self Report; Longitudinal Studies; *Accidental Falls/statistics & numerical data; *Sleep Quality

The everydayness of falling: consequences and management for adults with cerebral palsy across the life course

Shah S, Avery A, Bailey R, Bell B, Coulson N, Lüke R, McLaughlin J, Logan P. *Disabil. Rehabil.* 2024; ePub(ePub): ePub.

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

DOI: 10.1080/09638288.2024.2376346 **PMID:** 38994847

Abstract

PURPOSE: To explore the cause, influences and consequences of falling for adults with cerebral palsy (CP) across their life course, and how this is managed.

MATERIALS AND METHODS: We used interview data from a multimethod UK study exploring the effects of ageing with CP and healthcare across the life course. Twenty-six participants were recruited and interviewed using various digital platforms to maximise inclusive participation in the UK. Follow-up email semi-structured interviews were conducted to further explore experiences of falls. Transcribed interviews were analysed thematically.

RESULTS: Falling and fear of falling (FoF) is problematic for over half of the participants in the sample. They perceived falls and FoF as limiting their participation, autonomy and independence in employment, social and cultural activities. Participants used their own management strategies, due to limited specialist interventions or practitioner knowledge to manage or prevent falls. Practices, such as the use of a wheelchair or avoiding activities prompted changes to relationships and identity.

CONCLUSIONS: Falling for adults with CP happens earlier in life compared to the general population. Adults with CP may benefit from specialist falls prevention services to help maintain muscle strength and balance. Research is needed to evaluate effective interventions for people with CP.

Language: en

Keywords: rehabilitation; mobility; falling; walking; adults; life course; Cerebral palsy; participation

Housing characteristics and hospital admissions due to falls on stairs: a National Birth Cohort study

Simpson CH, Lewis K, Taylor J, Hajna S, Macfarlane A, Hardelid P, Symonds P. J. *Pediatr.* 2024; ePub(ePub): ePub.

(Copyright © 2024, Elsevier Publishing)

DOI: 10.1016/j.jpeds.2024.114191

PMID: 39004170

Abstract

OBJECTIVE: To assess associations between housing characteristics and risk of hospital admissions related to falls on/from stairs in children, to help inform prevention measures.

STUDY DESIGN: An existing dataset of birth records linked to hospital admissions up to age 5 for a cohort of 3,925,737 children born in England between 2008 and 2014, was linked to postcode-level housing data from Energy Performance Certificates. Association between housing construction age, tenure (eg, owner occupied), and built form and risk of stair-fall-related hospital admissions was estimated using Poisson regression. We stratified by age (<1 and 1-4 years), and adjusted for geographic region, Index of Multiple Deprivation, and maternal age.

RESULTS: Incidence was higher in both age strata for children in neighborhoods with homes built before 1900 compared with homes built in 2003 or later (incidence rate ratio [IRR] 1.40, 95% confidence interval [CI] 1.10-1.77 [age <1 year], 1.20, 95% CI 1.05-1.36 [age 1-4 years]). For ages 1-4 years, incidence was higher for those in neighborhoods with housing built 1900-1929, compared with 2003 or later (IRR 1.26, 95% CI 1.13-1.41), or with predominantly social-rented homes compared with owner occupied (IRR 1.21, 95% CI 1.13-1.29). Neighborhoods with predominantly houses compared with flats had higher incidence (IRR 1.24, 95% CI 1.08-1.42 [<1 year] and IRR 1.16, 95% CI 1.08-1.25 [1-4 years]).

CONCLUSION: Changes in building regulations may explain reduced fall incidence in newer homes compared with older homes. Fall prevention campaigns should consider targeting neighborhoods with older or social-rented housing. Future analyses would benefit from data linkage to individual homes, as opposed to local area level.

Language: en

Exergames for falls prevention in sheltered homes: a feasibility study

Stanmore E, Eost-Telling C, Meekes W, Banham K, Chillala J, Roy B, Firth J. *Front. Public Health* 2024; 12: e1344019.

(Copyright © 2024, Frontiers Editorial Office)

DOI: 10.3389/fpubh.2024.1344019

PMID: 38975352

PMCID: PMC11227257

Abstract

INTRODUCTION: Falls prevention is a global priority given its substantial impact on older adults and cost to healthcare systems. Advances in telerehabilitation technology such as 'exergaming' show potential for delivering accessible, engaging exercise programs for older adults. This study aimed to establish the feasibility, acceptability and usability of exergaming in sheltered housing.

METHODS: A mixed-methods study with participants randomised in 2 sheltered housing facilities to intervention (n = 1 home, 12 participants) and control (n = 1 home 2, 12 participants) provided usual care for all, (physiotherapy prescribed strength and balance exercises and falls prevention advice) and a 6-week supervised exergaming programme (MIRA) offered 3 times per week to the intervention group only. At 6 weeks, feasibility, usability and acceptability outcomes were collected and analysed using descriptive statistics; qualitative focus groups with participants and interviews with staff were also completed and thematically analysed to elicit barriers and facilitators to usability and acceptability.

RESULTS: Mean exercise per week increased from 10.6 to 14.1 minutes in the control group and 9.6 to 36.8 minutes in the intervention group. All study processes and measures appeared feasible; 72% of those invited consented to taking part and 92% completed 6-week follow-up. Individual domains for the System Usability Scores (SUS) showed participants felt 'very confident' using the system with support (70%), would 'like to use exergames frequently' (50%) and found the system 'easy to use' (90%). However, they also felt they 'needed to learn a lot at the beginning' (40%) and would 'need technical support' (70%) for independent use of the exergames. Mean overall SUS was 63 reflecting moderate usability for independent use. Qualitative data indicated exergames were well received and highlighted motivational and social aspects; costs and set up. Staff also felt exergaming complemented traditional care.

DISCUSSION: Our study contributes to the evidence guiding the use of exergames to deliver suitable falls prevention interventions for older adults within sheltered housing in community settings.

Language: en

Keywords: Humans; Aged; Female; Male; Aged, 80 and over; Focus Groups; older adults; Video Games; *Accidental Falls/prevention & control; *Exercise Therapy/methods; fall prevention; falls; *Feasibility Studies; active video game; exergame; sheltered housing; strength and balance; telecare

Reduced adaptability to balance perturbations in older adults with probable cognitive impairment after a severe fall

Voß M, Zieschang T, Schmidt L, Hackbarth M, Koschate J, Stuckenschneider T. PLoS One 2024; 19(7): e0305067.

(Copyright © 2024, Public Library of Science)

DOI: 10.1371/journal.pone.0305067

PMID: 38985810

PMCID: PMC11236103

Abstract

Falls in older individuals often result from unexpected balance disturbances during walking, necessitating the analysis of recovery strategies for effective falls prevention. This becomes particularly crucial for individuals with cognitive impairment, who face a higher fall risk compared to cognitively healthy adults. Hence, our study aimed to compare the recovery response to standardized walking perturbations on a treadmill between older adults with cognitive impairment and cognitively healthy older adults. 36 individuals with a recent history of a severe fall, leading to an emergency department visit without subsequent admission, were stratified into two groups (with and without probable cognitive impairment) based on scores of the Montreal Cognitive Assessment. Recovery performance was quantified using force plate data from a perturbation treadmill (M-Gait, Motek Medical B.V., Amsterdam, the Netherlands), specifically evaluating the number of steps needed to restore step length and width to pre perturbation baseline across two trials of nine different perturbations. Individuals with cognitive impairment ($n = 18$, mean age: 74.7) required significantly ($p = 0.045$, Cohen's $d = 0.69$) more steps to recover total steps after perturbations compared to cognitively healthy individuals ($n = 18$, mean age: 69.7). While step width recovery was similar between the groups, those with probable cognitive impairment required significantly more steps to recover their step length ($p = 0.039$, Cohen's $d = 0.72$). Thus, our findings indicate that older adults with probable cognitive impairment manifest inferior gait adaptability, especially in adapting step length, potentially underscoring a critical aspect for effective falls prevention in this population.

Language: en

Keywords: Humans; Aged; Female; Male; Aged, 80 and over; *Accidental Falls/prevention & control; Walking/physiology; Gait/physiology; *Cognitive Dysfunction/physiopathology; *Postural Balance/physiology; Adaptation, Physiological/physiology; Exercise Test

Trends of falls mortality among older adults in urban and rural China, 1987-2021

Wu Y, Su B, Gao J, Zhong P, Zheng X. *Inj. Prev.* 2024; ePub(ePub): ePub.

(Copyright © 2024, BMJ Publishing Group)

DOI: 10.1136/ip-2023-045225 **PMID:** 39002974

Abstract

BACKGROUND: Falls in older age pose a major public health concern, with unclear urban-rural patterns of falls mortality in China. This study examines the trends of late-life falls mortality in urban and rural China over a 35-year period.

METHODS: Falls mortality data were sourced from China's National Health Commission. Joinpoint regression analysis was used to examine changes in trends and age-period-cohort modelling to estimate age, period and cohort effects on fall-related mortality from 1987 to 2021. Net drift, local drift, longitudinal age curves and period relative risks were also calculated.

RESULTS: The age-standardised falls mortality in older age showed a long-term trend of initial decline prior to 2003, followed by a steep increase thereafter, with notable distinctions between urban and rural patterns. The rise in rural populations, particularly among older males, was more conspicuous. In rural areas, the decline in falls mortality diminished with age, contrary to the urban trend. Falls mortality increased with age in both urban and rural older populations, peaking in the group aged 85-89. The period effect curves of falls mortality in urban and rural areas both approximated a U-shaped pattern while there were minor variations in early cohorts.

CONCLUSIONS: China has experienced a consistent rise in late-life falls mortality in recent years. Notably, there are significant urban-rural disparities in age, period and cohort effects of fall-related mortality among older adults. Rural residents, males and older age groups have potential higher fatal-falls risk. Targeted strategies should be implemented to prevent late-life falls.

Language: en

Keywords: Surveillance; Epidemiology; Mortality; Fall; Older People

Statin use and fall risk in adults: a cross-sectional survey and mendelian randomization analysis

Zheng H, Fang YJ, Wang ST, Huang YB, Tang TC, Chen M. *Front. Pharmacol.* 2024; 15: e1364733.

(Copyright © 2024, Frontiers Media)

DOI: 10.3389/fphar.2024.1364733

PMID: 38989146

PMCID: PMC11233697

Abstract

BACKGROUND AND OBJECTIVE: The issue of falls poses a significant threat to the health of the elderly population. Although statins can cause myopathy, which implies that they may cause balance problems and increase the risk of falling, this has not been tested. Our objective was to assess whether the use of statins is linked to a higher risk of falls.

METHODS: A cross-sectional survey study and Mendelian randomization (MR) study were conducted to examine whether the use of statins was associated with an increased risk of falling and balance problems. The cross-sectional study included 2,656 participants from the US population (NHANES) who reported information on balance and falling problems in the past year and their use of statins. Univariate and multivariate logistic regression models were used to investigate the association between statin use and the likelihood of falling or experiencing balance problems. The MR study identified five Single Nucleotide Polymorphisms (SNPs) that predict statin use across five ancestry groups: Admixed African or African, East Asian, European, Hispanic, and South Asian. Additionally, SNPs predicting the risk of falls were acquired from the UK Biobank population. A two-sample MR analysis was performed to examine whether genetically predicted statin use increased the risk of falls.

RESULTS: The use of statins was found to be associated with an increased likelihood of balance and falling problems (balance problem, OR 1.25, 95%CI 1.02 to 1.55; falling problem, OR 1.27, 95%CI 1.03-1.27). Subgroup analysis revealed that patients under the age of 65 were more susceptible to these issues when taking statins (balance problem, OR 3.42, 95%CI 1.40 to 9.30; falling problem, OR 5.58, 95%CI 2.04-15.40). The MR analysis indicated that the use of statins, as genetically proxied, resulted in an increased risk of falling problems (OR 1.21, 95% CI 1.1-1.33).

CONCLUSION: Our study found an association between the use of statins and an increased risk of balance problems and falls in adults over 40 years old, and the MR study result suggested statin use increased risk of falls. The risk was higher in participants under 65 years old compared to those over 65 years old.

Language: en

Keywords: cross-sectional study; fall risk; balance problem; mendelian randomization analysis; statin use