Evaluation of a student pharmacist-driven fall-prevention program for older people

Lohmann AM, Coad LM, Barton CE, Vulcano DG, Li J, Emptage RE. Sr. Care Pharm. 2024; 39(7): 267-276.

Abstract

There is limited research on the impact of fall prevention education for older community-living people led by student pharmacists, which includes a medication review to identify Fall Risk-Increasing Drugs (FRIDs). Study objectives were to first assess the knowledge and behavioral intentions of older people after attending a student pharmacist-led fall-prevention program (FPP) and secondly to quantify the number of FRIDs identified during a medication review. Between October 2022 and April 2023, four independent-living facilities and two senior centers served as programming locations. Events began with a fall prevention-focused presentation provided by student pharmacists. Attendees voluntarily filled out surveys to assess their knowledge and behavioral intentions regarding fall prevention. Optional medication reviews were offered. Additional survey questions were asked of medication review participants. If FRIDs were identified, the individual was provided documentation to share with their prescriber. Fall prevention bingo was offered at select events to review educational content and engage those waiting for a medication review. Eighty-six older people attended the presentations; 45 people completed medication reviews across six sites. Survey information was available for 65 presentation attendees and 29 medication review participants. After programming, 64 out of 65 participants stated they felt comfortable speaking to their pharmacist or provider about falls and their medications. Most survey respondents correctly selected which medications increase fall risk. Twenty-two of 29 medication review participants were taking at least one FRID. The FPP described showed positive results through a post-survey evaluation. Participants demonstrated knowledge of fall hazards including medications and a willingness to discuss falls and FRIDs with health professionals. These factors may lead to concrete interventions to avoid falls and their associated health consequences for older people.

Association between the Hopkins Falls grading scale and motor function tests in patients with multiple sclerosis

Mashoufi R, Nahayati MA, Meshkat M, Ebrahimi SA, Salimi M, Yekta MM, Alehashemi A.
J. Family Med. Prim. Care 2024; 13(5): 2099-2103.

Abstract

INTRODUCTION: One of the main complications of multiple sclerosis (MS) is imbalance and walking problems that can lead to falls. This study investigated the association between a fall measurement scale called the Hopkins Falls Grading Scale (HFGS) and motor function tests in patients with MS. MATERIAL AND METHODS: This cross sectional study was conducted using convenience sampling on 85 patients referred to the MS Association of Mashhad, Iran, in 2023. The HFGS examined falls during the past year and divided them into 4 degrees, and the function test included the timed 25 foot walk (T25FW) test and the timed up and go (TUG) test. Kruskal-Wallis test and Spearman's correlation coefficient were used for data analysis.

RESULTS: A statistically significant association was obtained between HFGS and functional tests (T25FW and TUG) (for both $P < 0.0001$). A significant association was observed between the variables of age ($P = 0.006$), duration of the disease ($P = 0.03$), the use of mobility devices ($P = 0.05$), and HFGS.

CONCLUSION: Considering the association between HFGS and motor function tests in MS patients, clinical experts should pay attention to patients who have slower movement and evaluate them in terms of falling status when performing motor function tests.

Effect of statin use on gait speed and balance in older adults

Abstract

Several studies have reported the effects of gait speed and balance on hypertension, cerebrovascular, and cardiovascular diseases (Fig. 1; top right-pointing arrow). According to a 4-year follow-up of 2733 older Chinese adults with objectively measured walking speeds, the faster the walking speed, the lower the risk of developing hypertension [1]. This association was evident in obese individuals but not thin ones [1]. A causal analysis using Mendelian randomization in a sample of 340,000 participants of European ancestry from the UK Biobank showed that a faster habitual walking pace had a protective effect on cardiovascular disease risk [2]. This protective effect was 45% mediated through body mass index [2]. Conversely, hypertension and lipid abnormalities may affect walking speed and balance (Fig. 1, bottom left arrow). The results of a cross-sectional study of 268 patients with vascular risk factors but without Parkinsonism or dementia showed significantly higher rates of gait and balance impairment in patients with lacunar infarctions, periventricular hyperintensities, white matter hyperintensities, and microcerebrovascular disease [3], suggesting that hypertension and lipid abnormalities may affect gait and balance impairments via microcerebrovascular disorders. ...

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Managing falls onsite in residential aged care homes reduced hospitalisation: mixed methods results from the Falls Outreach and Residential Mobile Assessment Team (FORMAT) pilot study

Miller J, Bee A, Pattison D, Walker M, Aldridge E, Hackett L, Owen PJ, Marangon-Elliott R, Buntine P. Australas. J. Ageing 2024; ePub(ePub): ePub.

Abstract

OBJECTIVE: Falls are the leading cause of hospital transfer from residential aged care homes (RACHs). However, many falls do not result in significant injury, and ageing patients are exposed to complications while hospitalised. Inreach services are designed to reduce hospital transfer by providing care, support and assessment to residents at the RACH. This study evaluated a pilot inreach program targeting ageing patients following a fall.

METHODS: We conducted a prospective, mixed methods evaluation of a 5-month (May–September 2022) pilot implementation across 108 government-funded RACHs within a single health-care network in Melbourne, Australia.

RESULTS: A total of 123 residents (median [interquartile range] age: 88 [82, 94] years, female: 49%) were included in the intervention. The majority (n = 116, 94%) of residents were managed onsite and required no further investigation (n = 80, 69%) or treatment (n = 63, 54%). Among the seven residents referred to the emergency department (ED), two received hospital admission and five were transferred back to residential care. In the 7 days following referral to the intervention, four additional residents were referred to the ED and one received hospital admission. Qualitative feedback (n = 40) included specific comments relating to themes of general satisfaction (n = 20, 50%), compliments for staff (n = 16, 40%) and acknowledgement of comprehensiveness (n = 9, 23%).

CONCLUSIONS: Implementation of a specialised fall assessment team to complement an existing geriatric-led RACH assessment service meant that a high rate of eligible residents were managed onsite, with very low need for subsequent hospitalisation. Residents, family members and caregivers expressed high rates of satisfaction with the service.

Association between the use of orexin receptor antagonists and falls or fractures: a meta-analysis

Pan G, Ni L, Yan H, Yao L. J. Psychiatr. Res. 2024; 176: 393-402.

Abstract

Evidence indicates that the use of sedative-hypnotics, including benzodiazepines and z-drugs, is linked to an increased risk of falls and fractures. Nonetheless, the potential exacerbation of this risk by orexin receptor antagonists, which are novel therapeutic agents for treating insomnia, remains uncertain despite their escalating prevalence in clinical practice. We systematically searched four electronic databases from inception to April 17, 2024. In addition, we performed a quality assessment; calculated pooled odds ratios (ORs) to assess the relationship between the use of orexin receptor antagonists and the occurrence of falls or fractures; evaluated heterogeneity across the included studies; and conducted sensitivity analyses. The meta-analysis encompassed eight papers, comprising a total of 46,636 subjects. These papers included 5 case-control studies and 3 randomized controlled trials (RCTs), collectively encompassing ten studies. Analysis of the included case-control studies (pooled adjusted OR = 0.75, 95% confidence interval [CI] = 0.00-1.50, I(2) = 66.2%, k = 3) and RCTs (OR = 0.68, 95% CI = 0.31-1.50, I(2) = 45.9%, k = 5) indicated that the use of orexin receptor antagonists did not elevate the risk of falls. Similarly, analysis of the included case-control studies revealed no significant increase in the risk of fractures associated with the use of orexin receptor antagonists (pooled adjusted OR = 1.01, 95% CI = 0.82-1.20, I(2) = 40.1%, k = 2). This meta-analysis suggests that the use of orexin receptor antagonists for treating insomnia does not escalate the risk of falls or fractures, although the data for lemborexant and daridorexant are limited.

A toe-to-head approach to reducing the risk of falls in older adults: a guide for primary care

Abstract

How can clinicians screen for fall risk in older adults?

The world guidelines for falls prevention and management for older adults recommend that all older adults 'should be advised on falls prevention and physical activity', and that '[t] hose considered at high risk should be offered a comprehensive multifactorial falls risk assessment'.1 Yet the multifactorial risk factors for falling are numerous, and clinicians may struggle to efficiently evaluate high-risk patients.2 This article describes a 'toe-to-head' approach to the fall risk assessment, which synthesises evidence-based falls risk evaluation strategies, and is designed to meet this need in a manner aligned with the 4Ms of an age-friendly health system -- Mobility, Mentation, Medications, and What Matters...

Feet first: fall risk assessment from toe to head starting with the lower extremities

This 'toe-to-head' approach to fall risk reduction begins with the feet. An examination of the skin, nails, shoes, soles, and overall condition of the feet provides information that might otherwise be difficult to elicit, including problems in self-care, sensation, and proprioception. Potential interventions for commonly encountered problems include referral to podiatry for toenail clipping, modifications for ill-fitting shoes, and wound care for skin breakdown.5 In particular, the often hidden 'long toenail sign' -- long, untrimmed toenails -- may suggest emerging difficulties with functional independence...

Screening for risk of fall-related inpatient trauma in a US acute care setting

Abstract

Introduction Falls during hospitalization are a leading cause of preventable trauma-related injuries. Factors associated with fall risk include an unfamiliar environment, changes in health status, and efficacy based on the home environment. Assessing fall efficacy with an individualized prevention plan can decrease falls. The primary aim of this study was to estimate the effect of implementing a fall efficacy screening and intervention on reducing patient falls.

METHODS The study utilized a quasi-experimental, cross-sectional design with a convenience sample of patients admitted to an in-patient adult medical unit within a community hospital over a twelve-month period. Sampling times included pre-implementation, immediately post-implementation, and a second post-implementation phase. The intervention consisted of an admission fall efficacy screening tool and an individualized educational initiative. Statistical analysis included descriptive statistics of central tendency and dispersion, along with inferential statistics using independent sample t-tests, chi-square tests, correlations, and binary logistic regression.

RESULTS Among the study participants (n=2,074), the total sample had an average age of 67.7 (+/- 17.4) years and had mean scores of 13.3 (6.9) on the Short Falls Efficacy Scale-International and 51.8 (20.3) on the Morse Fall Scale. Fifty-two percent of the study population were female; 16.2% of the patients were diagnosed with cerebrovascular accident (CVA) or CVA-like symptoms. Fall rates decreased with a rate of change of -4.15% after efficacy screening and intervention. Males demonstrated higher efficacy in avoiding falls compared to females (t(828) = 3.369, p <0.001). Patients with a CVA diagnosis demonstrated higher efficacy scores compared to non-CVA patients (t(2071) = -3.348, p <0.001). FES risk groups (OR of 5.632, 95% CI (2.171-7.892)) and age over 65 (OR 1.21, 95% CI (1.006-1.442)) were significant predictors of a fall when patients with a primary CVA diagnosis were omitted from the sample (p= 0.022 and 0.046 respectively).

CONCLUSION The findings suggest that efficacy screening may be associated with decreased falls for acute care non-CVA inpatient populations over 65 years of age. Further research into the predictive utility of fall efficacy screening in acute care CVA and non-CVA hospitalized patient populations aged 65 years and above is recommended.

Nonspecific stress biomarkers for mortality prediction in older emergency department patients presenting with falls: a prospective multicenter observational study

Terhalle L, Arntz L, Hoffmann F, Arnold I, Hafner L, Picking-Pitasch L, Zuppinger J, Delport Lehnen K, Leuppi J, Somasundaram R, Nickel CH, Bingisser R. Intern. Emerg. Med. 2024; ePub(ePub): ePub.

Abstract

BACKGROUND: Older patients presenting to the emergency department (ED) after falling are increasingly prevalent. Falls are associated with functional decline and death. Biomarkers predicting short-term mortality might facilitate decisions regarding resource allocation and disposition. D-dimer levels are used to rule out thromboembolic disease, while copeptin and adrenomedullin (MR-proADM) may be used as measures of the patient's stress level. These nonspecific biomarkers were selected as potential predictors for mortality.

METHODS: Prospective, international, multicenter, cross-sectional observation was performed in two tertiary and two regional hospitals in Germany and Switzerland. Patients aged 65 years or older presenting to the ED after a fall were enrolled. Demographic data, Activities of Daily Living (ADL), and D-dimers were collected upon presentation. Copeptin and MR-proADM levels were determined from frozen samples. Primary outcome was 30-day mortality; and secondary outcomes were mortality at 90, 180, and 365 days.

RESULTS: Five hundred and seventy-two patients were included. Median age was 83 [IQR 78, 89] years, 236 (67.7%) were female. Mortality overall was 3.1% (30 d), 5.4% (90 d), 7.5% (180 d), and 13.8% (365 d), respectively. Non-survivors were older, had a lower ADL index and higher levels of all three biomarkers. Elevated levels of MR-proADM and D-dimer were associated with higher risk of mortality. MR-proADM and D-dimer showed high sensitivity and low negative likelihood ratio regarding short-term mortality, whereas copeptin did not.

CONCLUSION: D-dimer and MR-proADM levels might be useful as prognostic markers in older patients presenting to the ED after a fall, by identifying patients at low risk of short-term mortality.

TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT02244983.

Reframing communication about fall prevention programs to increase older adults' intentions to participate

van Scherpenseel MC, van Veenendaal LJ, Te Velde SJ, Volk E, Barten DJJA, Veenhof C, Emmelot-Vonk MH, Ronteltap A. Int. J. Environ. Res. Public Health 2024; 21(6): e704.

Abstract

INTRODUCTION: Falls and fall-related injuries in community-dwelling older adults are a growing global health concern. Despite effective exercise-based fall prevention programs (FPPs), low enrollment rates persist due to negative connotations associated with falls and aging. This study aimed to investigate whether positive framing in communication leads to a higher intention to participate in an FPP among community-dwelling older adults.

METHODS: We conducted a two-sequence randomized crossover study. We designed two flyers, a standard flyer containing standard terminology regarding FPPs for older adults, and a reframed flyer highlighting fitness and activity by reframing 'fall prevention' as an 'exercise program' and 'old' as 'over 65 years'. With a Mann-Whitney U test, we investigated group differences regarding the intention to participate between the flyers. A sensitivity analysis and subgroup analyses were performed. We conducted qualitative thematic analysis on open-ended answers to gain a deeper understanding of participants' intention to participate.

RESULTS: In total, we included 133 participants.

FINDINGS indicated a significantly higher intention to participate in the reframed flyer (median = 4; interquartile range = 1-6) compared to the standard flyer (median = 2; interquartile range = 1-4) (p = 0.038). Participants favored more general terms such as 'over 65 years' over 'older adults'. Older adults who were female, not at high fall risk, perceived themselves as not at fall risk, and maintained a positive attitude to aging showed greater receptivity to positively-framed communications in the reframed flyer. Additionally, already being engaged in physical activities and a lack of practical information about the FPP appeared to discourage participation intentions.

DISCUSSION: The results in favor of the reframed flyer provide practical insights for designing and implementing effective (mass-)media campaigns on both (inter)national and local levels, as well as for interacting with this population on an individual basis. Aging-related terminology in promotional materials hinders engagement, underscoring the need for more positive messaging and leaving out terms such as 'older'. Tailored positively framed messages and involving diverse older adults in message development are essential for promoting participation in FPPs across various population subgroups to promote participation in FPPs among community-dwelling older adults.

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80 and over; Exercise; communication; *Accidental Falls/prevention & control; *Cross-Over Studies; *Intention; community-dwelling older adults; fall prevention program; Independent Living; reframing

Determinants influencing the implementation of multifactorial falls risk assessment and multidomain interventions in community- dwelling older people: a systematic review

Vandervelde S, Van den Bosch N, Vlaeyen E, Dierckx de Casterlé B, Flamaing J, Belaen G, Tuand K, Vandendriessche T, Milisen K. Age Ageing 2024; 53(7): afae123.

Abstract

BACKGROUND: Multifactorial falls risk assessment and multidomain interventions are recommended by the World guidelines for falls prevention and management. To successfully implement these interventions, it is important to understand determinants influencing the implementation.

METHODS: A literature search was conducted for this systematic review on the 3 December 2021 and updated on the 3 April 2023 in five databases: PubMed (including MEDLINE), EMBASE (via Embase.com), Cochrane Central Register of Controlled Trials (via Cochrane Library), Web of Science Core Collection and CINAHL (via EBSCO). Studies were included if they reported on determinants influencing the implementation of a multifactorial falls risk assessment and/or multidomain interventions in community-dwelling older people. Editorials, opinion papers, systematic reviews and studies focusing on one population (e.g. Parkinson) were excluded. Two researchers independently screened the articles on title, abstract and full text. The quality was evaluated based on a sensitivity analysis. 'The Comprehensive Integrated Checklist of Determinants of practice' was used to categorise the determinants.

RESULTS: Twenty-nine studies were included. Determinants were classified as barriers (n = 40) and facilitators (n = 35). The availability of necessary resources is the most reported determinant. Other commonly reported determinants are knowledge, intention/beliefs and motivation at the levels of older people and healthcare professionals, fitting of the intervention into current practice, communication, team and referral processes and financial (dis)incentives.

CONCLUSIONS: Mapping of the barriers and facilitators is essential to choose implementation strategies tailored to the context, and to enhance the uptake and effectiveness of a multifactorial falls risk assessment and/or multidomain interventions.

Association between opioid-benzodiazepine trajectories and injurious fall risk among US medicare beneficiaries

Wang GHM, Hincapie-Castillo JM, Gellad WF, Jones BL, Shorr RI, Yang S, Wilson DL, Lee JK, Reisfield GM, Kwoh CK, Delcher C, Nguyen KA, Harle CA, Marcum ZA, Lo-Ciganic WH. J. Clin. Med. 2024; 13(12): e3376.

Abstract

Background/Objectives: Concurrent opioid (OPI) and benzodiazepine (BZD) use may exacerbate injurious fall risk (e.g., falls and fractures) compared to no use or use alone. Yet, patients may need concurrent OPI-BZD use for co-occurring conditions (e.g., pain and anxiety). Therefore, we examined the association between longitudinal OPI-BZD dosing patterns and subsequent injurious fall risk.

METHODS: We conducted a retrospective cohort study including non-cancer fee-for-service Medicare beneficiaries initiating OPI and/or BZD in 2016-2018. We identified OPI-BZD use patterns during the 3 months following OPI and/or BZD initiation (i.e., trajectory period) using group-based multi-trajectory models. We estimated the time to first injurious falls within the 3-month post-trajectory period using inverse-probability-of-treatment-weighted Cox proportional hazards models.

RESULTS: Among 622,588 beneficiaries (age ≥ 65 = 84.6%, female = 58.1%, White = 82.7%; having injurious falls = 0.45%), we identified 13 distinct OPI-BZD trajectories: Group (A): Very-low OPI-only (early discontinuation) (44.9% of the cohort); (B): Low OPI-only (rapid decline) (15.1%); (C): Very-low OPI-only (late discontinuation) (7.7%); (D): Low OPI-only (gradual decline) (4.0%); (E): Moderate OPI-only (rapid decline) (2.3%); (F): Very-low BZD-only (late discontinuation) (11.5%); (G): Low BZD-only (rapid decline) (4.5%); (H): Low BZD-only (stable) (3.1%); (I): Moderate BZD-only (gradual decline) (2.1%); (J): Very-low OPI (rapid decline)/Very-low BZD (late discontinuation) (2.9%); (K): Very-low OPI (rapid decline)/Very-low BZD (increasing) (0.9%); (L): Very-low OPI (stable)/Low BZD (stable) (0.6%); and (M): Low OPI (gradual decline)/Low BZD (gradual decline) (0.6%). Compared with Group (A), six trajectories had an increased 3-month injurious falls risk: (C): HR = 1.78, 95% CI = 1.58-2.01; (D): HR = 2.24, 95% CI = 1.93-2.59; (E): HR = 2.60, 95% CI = 2.18-3.09; (H): HR = 2.02, 95% CI = 1.70-2.40; (L): HR = 2.73, 95% CI = 1.98-3.76; and (M): HR = 1.96, 95% CI = 1.32-2.91.

CONCLUSIONS: Our findings suggest that 3-month injurious fall risk varied across OPI-BZD trajectories, highlighting the importance of considering both dose and duration when assessing injurious fall risk of OPI-BZD use among older adults.

Medicare fee-for-service spending for fall injury and nonfall events: the health, aging, and body composition study

Xue L, Napoleone JM, Winger ME, Boudreau RM, Cauley JA, Donohue JM, Newman AB, Waters TM, Strotmeyer ES. Innov. Aging 2024; 8(6): igae051.

Abstract

BACKGROUND AND OBJECTIVES: Fall injuries are prevalent in older adults, yet whether higher spending occurs after nonfracture (NFFI) and fracture is unknown. We examined whether incident fall injuries, including NFFI and fractures, were associated with higher Medicare spending in 12 months after incident events in older adults. RESEARCH DESIGN AND METHODS: The Health, Aging, and Body Composition Study included 1 595 community-dwelling adults (53% women, 37% Black; 76.7 ± 2.9 years) with linked Medicare Fee-For-Service (FFS) claims at 2000/01 exam. Incident outpatient and inpatient fall injuries (N = 448) from 2000/01 exam to December 31, 2008 were identified using the first claim with a nonfracture injury diagnosis code with a fall E-code, or a fracture diagnosis code with/without an E-code. Up to 3 participants without fall injuries (N = 1 147) were matched on nonfall events to 448 participants in the fall injury month. We calculated the change in monthly FFS spending in 12 months before versus after index events in both groups. Generalized linear regression with centered outcomes and gamma distributions examined the association of prepost expenditure changes with fall injuries (including NFFI and fractures) adjusting for related covariates.

RESULTS: Monthly spending increased after versus before fall injuries (USD$2 261 vs $981), nonfracture (N = 105; USD$2 083 vs $1 277), and fracture (N = 343; USD$2 315 vs $890) injuries (all p < .0001). However, after adjusting for covariates in final models, fall injuries were not significantly associated with larger increases in spending/month versus nonfall events (differential increase: USD$399.58 [95% CI: -USD$44.95 to $844.11]). Fracture prepost change in monthly spending was similar versus NFFI (differential increase: USD$471.93 [95% CI: -USD$21.17 to $965.02]).

DISCUSSION AND IMPLICATIONS: Although substantial increases occurred after injuries, with fracture and NFFI increasing similarly, changes in monthly spending after fall injury were not different compared to nonfall events. Our results contribute to the understanding of subsequent spending after fall injury that may inform further research on fall injury-related health care spending.

Dual sensory impairment predicts an increased risk of postdischarge falls in older patients

Yamada Y, Nakashima H, Nagae M, Watanabe K, Fujisawa C, Komiya H, Tajima T, Sakai T, Satake S, Takeya Y, Umeda-Kameyama Y, Umegaki H. J. Am. Med. Dir. Assoc. 2024; ePub(ePub): ePub.

Abstract

OBJECTIVES: The purpose of this study was to determine the associations of vision impairment, hearing impairment, and comorbid vision and hearing impairment (ie, dual sensory impairment [DSI]) on admission to hospital with falls within 3 months of discharge in older patients.

DESIGN: This prospective multicenter study included patients admitted to and discharged from geriatric wards at 3 university hospitals and 1 national medical center in Japan between October 2019 and July 2023. SETTING AND PARTICIPANTS: Of 1848 individuals enrolled during the study period, 1141 were excluded, leaving 707 for inclusion in the analysis.

METHODS: Participants' background factors were compared in terms of whether they had a fall during the 3 months postdischarge. Logistic regression analysis was then performed using the presence or absence of falls after discharge as the objective variable. Three models were created using vision impairment, hearing impairment, and DSI as covariates. Other covariates included physical function, cognitive function, and depression. In addition, logistic regression analysis was performed with falls during hospitalization as the objective variable.

RESULTS: DSI was significantly more common in the falls group (P =.004). Logistic regression analysis showed that the risk of falls after discharge was higher in patients with DSI (odds ratio 3.432, P =.006) than in those with vision or hearing impairment alone. When adjusted for physical function, cognitive function, depression, and discharge location, DSI was significantly associated with an increased risk of falls after discharge (odds ratio 3.107, P =.021). The association between DSI and falls during hospitalization did not reach statistical significance, but a trend was observed.

CONCLUSIONS AND IMPLICATIONS: This study is the first to show an association between DSI and falls after discharge. Simple interventions for patients with DSI may be effective in preventing falls, and we suggest that they be actively implemented early during hospitalization.