

Safety Literature 16th June 2024

Prevalence and factors associated with falls in older adults in a Middle Eastern population: a retrospective cross-sectional study

Alsayed Hassan DA, Chivese T, Syed MA, Alhussaini NWZ. Public Health 2024; 233: 54-59.

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DOI: 10.1016/j.puhe.2024.04.011

PMID: 38848620

Abstract

OBJECTIVE: The main objective was to determine the prevalence of falls and associated factors in older adults living in Qatar. **STUDY DESIGN:** Cross-sectional study.

METHODS: This is a cross-sectional study of older adults aged ≥ 60 years with at least one encounter with primary health care corporation (PHCC) in Qatar during the period 2017-2022. Data on documented falls, demographic variables, and medical comorbidities were extracted from all PHCCs in Qatar. Descriptive and inferential statistics were used to address the aim of the study.

RESULTS: A total of 68,194 older adults had at least one encounter with PHCC. The median age was 65.0 years, 58.9% were males, and 32.6% were Qatari nationality. A higher percentage of falls was found in individuals with hypertension (80%), diabetes (74.2%), and dyslipidemia (48.9%), which were also the most prevalent comorbidities. The prevalence of falls was 6.7% (95% CI 6.6-6.9). Compared to individuals aged 60-69 years, individuals aged 70-79, 80-89, and 90-99 had increased odds of falls by 1.6 (95% CI 1.5, 1.8), 2.5 (95% CI 2.2, 2.8), and 2.6 (95% CI 2.0, 3.3), respectively. Females and individuals of Qatari nationality had increased odds of fall by 1.5 (95% CI 1.4, 1.6) and 1.2 (95% CI 1.1, 1.3), respectively. Orthostatic hypotension, syncope, Parkinson's disease, and hip arthritis showed the strongest associations with falls.

CONCLUSIONS: Given the growing population of older adults in the Middle East and North African region, falls is a public health concern. The risk factors identified in this study suggest the need for proactive healthcare strategies tailored to the unique needs of older adult populations.

Language: en

Keywords: Falls; Older adults; Geriatrics; Primary health care; Middle East North Africa (MENA)

How do discrepancies between subjective and objective health predict risk of injurious falls? A study of community-dwelling Swedish older adults?

Calvey B, McHugh Power J, Maguire R, Calderón-Larrañaga A, Welmer AK. *J. Am. Med. Dir. Assoc.* 2024; ePub(ePub): ePub.

(Copyright © 2024, Lippincott Williams and Wilkins)

DOI: 10.1016/j.jamda.2024.105072

PMID: 38857684

Abstract

OBJECTIVES: Previous studies demonstrated that discrepancies between subjective and objective health measures are associated with physical and mental health-related outcomes in older adults. We investigate whether such discrepancies are also associated with risk of injurious falls in community-dwelling Swedish older adults.

DESIGN: A prospective, observational cohort study. **SETTING AND PARTICIPANTS:** Using data from the Swedish National Study on Aging and Care in Kungsholmen, we followed 2222 community-dwelling older adults, aged ≥ 60 years at baseline, across a 10-year period of data collection (2001-2011).

METHODS: A "health asymmetry" metric classified older adults into 4 categories, based on the level of agreement between their subjective and objective health scores ("health pessimist," "health optimist," "poor health realist," and "good health realist"). Time-varying Cox proportional hazard and Laplace regressions investigated if these categories were associated with risk of injurious falls.

RESULTS: Over a 10-year follow-up, 23.5% of the sample experienced an injurious fall. Health optimists had the greatest risk of experiencing an injurious fall [hazard ratio (HR) 2.16, 95% CI 1.66, 2.80], compared with good health realists. Poor health realists (HR 1.77, 95% CI 1.50, 2.11) and health pessimists (HR 1.66, 95% CI 1.21, 2.29) also had increased risk of experiencing injurious falls, compared with good health realists. Being health pessimist was only associated with the risk of injurious falls within the younger cohort (HR 2.43, 95% CI 1.63, 3.64) and among males (HR 1.95, 95% CI 1.14, 3.33).

CONCLUSIONS AND IMPLICATIONS: Older adults with similar objective health levels may differ in terms of their injurious fall risk, depending on their subjective health. Interpreting subjective health alongside objective health is clinically pertinent when assessing injurious fall risk.

Language: en

Keywords: Falls; self-rated health; health asymmetry; health congruence; objective health; Swedish National study on Ageing and Care in Kungsholmen (SNAC-K)

Psychometric properties of the fall risk perception questionnaire-short version for inpatients in acute care hospitals

Choi J, Lee S, Park E, Ku S, Kim S, Yu W, Jeong E, Park S, Park Y, Kim HY, Kim SR. J. Korean Acad. Nurs. 2024; 54(2): 151-161.

(Copyright © 2024, Korean Society of Nursing Science)

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PMID: 38863185

Abstract

PURPOSE: Patients' perception of fall risk is a promising new indicator for fall prevention. Therefore, a fall risk perception questionnaire that can be used rapidly and repeatedly in acute care settings is required. This study aimed to develop a short version of the fall risk perception questionnaire (Short-FRPQ) for inpatients.

METHODS: For the psychometric measurements, 246 inpatients were recruited from an acute care hospital. The construct (using confirmatory factor analysis and discriminant validity of each item), convergent, and known-group validities were tested to determine the validity of the Short-FRPQ. McDonald's omega coefficient was used to examine the internal consistency of reliability.

RESULTS: In the confirmatory factor analysis, the fit indices of the Short-FRPQ, comprising 14 items and three factors, appeared to be satisfactory. The Short-FRPQ had a significantly positive correlation with the original scale, the Korean Falls Efficacy Scale-International, and the Morse Fall Scale. The risk of falls group, assessed using the Morse Fall Scale, had a higher score on the Short-FRPQ. McDonald's omega coefficient was .90.

CONCLUSION: The Short-FRPQ presents good reliability and validity. As patient participation is essential in fall interventions, evaluating the fall risk perception of inpatients quickly and repeatedly using scales of acceptable validity and reliability is necessary.

Language: en

Keywords: Humans; Adult; Aged; Female; Male; Middle Aged; Perception; Accidental Falls; Risk Assessment; Aged, 80 and over; Surveys and Questionnaires; Hospitals; Psychometrics; Factor Analysis, Statistical; Inpatients; *Accidental Falls/prevention & control; *Inpatients/psychology; *Perception; *Psychometrics

ROI for a fall prevention intervention: invest a little, save a lot

Cooper AS. Nurs. Adm. Q. 2024; 48(3): 248-252.

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DOI: 10.1097/NAQ.0000000000000647 **PMID:** 38848487

Abstract

Patient falls within the hospital setting continue to be a significant challenge globally with almost one million hospital falls occurring in the U.S. annually. Recent calculations showed that the average total cost of a hospitalized patient fall was \$62,521. One evidenced-based tool that has been shown to be effective is a colorful laminated poster, Fall TIPS poster, that was designed to engage and involve the patient in their fall prevention. One academic medical center utilized this implementation showing a successful return on investment (ROI). This project used a pre-post implementation design. After a successful pilot using the poster on one unit, the implementation was spread to all Adult Acute Care units (n = 10) within the institution. The outcome measures were fall and fall with injury counts and rates. The process measure was the completion of the fall prevention poster measured via audits. The calculation of ROI was completed using a four-step framework. The outcome data of fall and fall with injury showed a decrease from the pre-intervention months with both the fall count and rate decreasing by 23% and the fall with injury count and rate decreasing by 40%. The overall ROI calculation estimated an ROI of \$982,700. The successful results from this project support the evidence that shows this program and the use of the Fall TIPS poster helps reduce patient falls within the hospital and yields a favorable ROI.

Language: en

Keywords: Humans; Pilot Projects; *Accidental Falls/prevention & control/economics; Safety Management/methods/economics/standards

Does hip protector prevent falls and hip fractures? An umbrella review of meta-analyses

Da Q, Xiao Y, Wu F, Chen Y, Li L. BMC Geriatr. 2024; 24(1): e514.

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

DOI: 10.1186/s12877-024-05122-x

PMID: 38867191

Abstract

BACKGROUND: Wearing hip protectors is a measure used to prevent hip fractures caused by falls. However, its protective effect has remained controversial in previous studies. This study provides a rationale for the use of hip protectors by pooling all the current meta-analysis evidence.

METHODS: We conducted an umbrella review of all the current meta-analysis articles about the efficacy of hip protectors to reduce hip fractures and falls in communities and/or institutions. Major databases including EMBASE, Cochrane Library, PubMed and Web of Science, were searched up to June 2022. Two reviewers screened the studies, extracted the data, and conducted the methodological quality assessment independently. The primary outcome was the association statistic (odds ratio (OR), relative risk (RR), etc.) reported in the meta-analysis that quantified the influence of the intervention on hip fractures and falls compared to that of the control group. Narrative synthesis was also conducted. Forest plots and the AMSTAR score were used to describe the results and quality of the pooled literature, respectively.

RESULTS: A total of six meta-analysis articles were included in the study. Hip protectors were effective at reducing hip fractures in older individuals who were in institutions (nursing or residential care settings) but not in communities (RR = 0.70, 95% CI 0.58 to 0.85, I(2) = 42%, P < 0.001) (RR = 1.12, 95% CI 0.94 to 1.34, I(2) = 0%, P = 0.20), and they did not reduce falls (RR = 1.01, 95% CI 0.90 to 1.13, I(2) = 0%, P = 0.89).

CONCLUSIONS: Hip protectors are effective at preventing hip fractures in institutionalized older adults but not in community-dwelling older adults. **TRIAL REGISTRATION:** This study has been registered in PROSPERO (PROSPERO ID: CRD42022351773).

Language: en

Keywords: Humans; Aged; Falls; Older adults; Meta-Analysis as Topic; Umbrella review; *Accidental Falls/prevention & control; *Hip Fractures/prevention & control/epidemiology; *Protective Devices; Hip fractures; Hip protectors

Comparative analysis of psychiatric medications and their association with falls and fractures: a systematic review and network meta-analysis

Guo M, Tao S, Xiong Y, Dong M, Yan Z, Ye Z, Wu D. *Psychiatry Res.* 2024; 338: e115974.

(Copyright © 2024, Elsevier Publishing)

DOI: 10.1016/j.psychres.2024.115974 **PMID:** 38833938

Abstract

An association between psychiatric medications and falls and fractures in people taking them has been demonstrated, but which class or medication leads to the greatest risk of falls or fractures should be further investigated. The aim of this study was to compare and rank the magnitude of risk of falls and fractures due to different psychiatric medications. Eight databases were searched for this meta-analysis and evaluated using a frequency-based network meta-analysis. The results included a total of 28 papers with 14 medications from 5 major classes, involving 3,467,314 patients. The results showed that atypical antipsychotics were the class of medications with the highest risk of falls, and typical antipsychotics were the class of medications with the highest risk of resulting in fractures. Quetiapine ranked first in the category of 13 medications associated with risk of falls, and class Z drugs ranked first in the category of 6 medications associated with risk of fractures. The available evidence suggests that atypical antipsychotics and typical antipsychotics may be the drugs with the highest risk of falls and fractures, respectively. Quetiapine may be the medication with the highest risk of falls, and class Z drugs may be the medication with the highest risk of fractures.

Language: en

Keywords: Fracture; Fall; Psychiatric drugs; Network meta-analysis

Osteoporosis and fracture risk associated with novel antidepressants: a systematic review and meta-analysis

Hu J, Xie K, Wu S, Chen Y. *Actas Esp. Psiquiatr.* 2024; 52(3): 334-346.

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DOI: 10.62641/aep.v52i3.1560

PMID: 38863057

Abstract

BACKGROUND: The use of antidepressants, especially selective serotonin reuptake inhibitors (SSRIs), has been linked to adverse effects on bone health, but findings are conflicting. This study aimed to quantify the associations between newer antidepressants and bone mineral density (BMD) and fracture risk through a comprehensive meta-analysis.

METHODS: Observational studies on the association between the use of novel antidepressants and BMD and hip fracture were systematically searched in PubMed, Embase, CINAHL, Cochrane Library, and Scopus. Random effects meta-analyses were conducted to pool results across the eligible studies. The heterogeneity, publication bias, and influence were assessed extensively.

RESULTS: 14 eligible studies with 1,417,134 participants were identified. Antidepressant use was associated with significantly lower BMD compared to non-use at all skeletal sites examined, with pooled standardized mean differences (SMD) ranging from -0.02 (total hip) to -0.04 (femoral neck). Importantly, antidepressant use was associated with a 2.5-fold increased risk of hip fracture (pooled odds ratio (OR) 2.50, 95% CI 2.26-2.76). While heterogeneity was detected, the overall findings were robust in sensitivity analyses.

CONCLUSIONS: This meta-analysis provided strong evidence that novel antidepressants, especially widely used SSRIs, have detrimental impacts on bone health. The observed associations with decreased BMD and doubled hip fracture risk have important clinical implications.

Language: en

Keywords: Humans; Risk Factors; *Antidepressive Agents/adverse effects; *Bone Density/drug effects; *Hip Fractures/chemically induced/epidemiology; *Osteoporosis/chemically induced/drug therapy; Osteoporotic Fractures/chemically induced/epidemiology; Selective Serotonin Reuptake Inhibitors/adverse effects

Commentary on: Are multimorbidity patterns associated with fear of falling in community-dwelling older adults?

Hughes LD. J. Frailty Sarcopenia Falls 2024; 9(2): 161-165.

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DOI: 10.22540/JFSF-09-161

PMID: 38835625

PMCID: PMC11145098

Abstract

[Abstract unavailable]

Language: en

Association between indoor temperature during winter and falls at home in the past year among community-dwelling older adults: a cross-sectional analysis of the nationwide Smart Wellness Housing survey in Japan

Ito M, Ikaga T, Oguma Y, Saito Y, Fujino Y, Ando S, Murakami S. Nippon Ronen Igakkai Zasshi 2024; 61(2): 218-227.

地域在住高齢者における冬季の室温と年間の住宅内の転倒の関連：スマートウェルネス全国調査による横断研究

(Copyright © 2024, Japan Geriatrics Society)

DOI: 10.3143/geriatrics.61.218

PMID: 38839321

Abstract

AIM: Some studies have reported a higher incidence of falls during winter with similar proportions of indoor and outdoor falls. We investigated the relationship between indoor temperature during winter and falls at home in the past year among community-dwelling older adults.

METHODS: This cross-sectional study enrolled 964 individuals of ≥ 65 years of age in Japan. Participants answered questions about falls (including trips) at home within the past year, and the living room temperature was measured for 2 weeks during winter. Participants were divided into those living in cold (mean temperature near the floor $< 12^{\circ}\text{C}$), slightly cold ($12-17.9^{\circ}\text{C}$), and warm ($\geq 18^{\circ}\text{C}$) houses. The association between indoor temperature (cold vs. slightly cold vs. warm houses) and falls at home in the past year was examined using a logistic regression analysis adjusted for potential confounding factors.

RESULTS: Valid data were obtained from 907 participants (mean age: 72.0 ± 6.3 years), of whom 265, 553, and 89 lived in cold, slightly cold, and warm houses, respectively. In the past year, falls occurred once in 325 (35.8%) participants and multiple times in 148 (16.3%) participants. In warm houses, the odds ratio of falling once and multiple times in the past year was 0.49 ($p=0.032$) and 0.34 ($p=0.035$), respectively, in comparison to cold houses.

CONCLUSIONS: Living in cold houses may be associated with an increased risk of falling at home among older adults. Maintaining an appropriate indoor thermal environment during winter may reduce the risk of falling among individuals who spend most of their time at home.

Language: ja

Keywords: Humans; Cross-Sectional Studies; Aged; Female; Male; Japan; Aged, 80 and over; Surveys and Questionnaires; Older adults; Temperature; *Seasons; Housing; Fall; *Accidental Falls; *Independent Living; Indoor temperature; Winter

Comparison of effects of Otago exercise program vs gaze stability exercise on balance and fear of fall in older adults: a randomized trial

Kp N, D A, Nawed A, Nuhmani S, Khan M, Alghadir AH. *Medicine (Baltimore)* 2024; 103(23): e38345.

(Copyright © 2024, Lippincott Williams and Wilkins)

DOI: 10.1097/MD.00000000000038345 PMID: 38847714

Abstract

BACKGROUND: Fall occurrences and the associated risk of injury are debilitating and major health concerns in the older population. Several interventions have been investigated and implemented to address the needs of balance impairments and to reduce the increased risk of falls. This study aimed to compare the effectiveness of the Otago exercise program (OEP) and gaze stability exercises (GSE) on balance and the risk of falls in older adults residing at an old age home facility.

METHODS: Thirty elderly participants were equally and randomly divided into 2 groups: Group OEP received the OEP, and group GSE received GSE for 8 weeks (thrice a week). In addition, both groups also performed core muscle-strengthening exercises. The outcome measures were the Berg balance scale (BBS) and the Fall efficacy scale-International (FES-I).

RESULTS: The interventions resulted in significant improvements ($P < .001$) in both outcome measures in both groups. The mean pretest BBS scores of groups OEP and GSE increased from 40.4 and 39.2 to the mean post-test scores of 48 and 45.2, respectively. Similarly, the mean pretest FES-I scores of groups OEP and GSE also improved from 39.47 and 40.4 to the mean post-test scores of 32.73 and 36.07. The between-group comparison showed greater improvement ($P < .05$) in OEP group in both variables.

CONCLUSIONS: OEP and GSE were found to be beneficial rehabilitation programs in improving balance and fear of falls in healthy older adults. However, the OEP was found to be a more effective intervention and may allow better balance and fall prevention improvements. **TRIAL REGISTRATION:** The study has been registered in clinicaltrials.gov (ID: NCT05781776; on 23/03/2023).

Language: en

Keywords: Humans; Aged; Female; Male; Aged, 80 and over; *Accidental Falls/prevention & control; *Exercise Therapy/methods; *Fear/psychology; *Postural Balance

The impact of bone mineral density on the risk of falling: evidence from genetic correlation and Mendelian randomization analysis

Mao R, Peng L, Zhang Y, Li L, Ren Y. *Endocrine* 2024; ePub(ePub): ePub.

(Copyright © 2024, Holtzbrinck Springer Nature Publishing Group)

DOI: 10.1007/s12020-024-03904-2

PMID: 38851644

Abstract

BACKGROUND: Falls are the most common consequence of low bone mineral density (BMD). However, due to limitations inherent in observational studies, the causal relationship between the two remains unestablished.

METHODS: This study utilized Mendelian Randomization (MR) analysis to explore the causal relationship between BMD and the risk of falling, incorporating linkage disequilibrium score (LDSC) regression for genetic correlation assessment. The primary method was inverse-variance weighted (IVW), supplemented with sensitivity analyses and the causal analysis using summary effect estimates (CAUSE) to address heterogeneity and pleiotropy biases.

RESULTS: LDSC analysis indicated significant genetic correlations between BMD at various sites and falling risk ($r(g)$ range: -0.82 to 0.76, all $P < 0.05$). IVW analysis, with False Discovery Rate (FDR) correction, showed a protective causal effect of total body BMD (OR = 0.85, 95% CI 0.82-0.88, $P = 7.63 \times 10^{-17}$, $P(\text{FDR}) = 1.91 \times 10^{-16}$), femoral neck BMD (OR = 0.81, 95% CI 0.75-0.88, $P = 3.33 \times 10^{-7}$, $P(\text{FDR}) = 5.55 \times 10^{-7}$), lumbar spine BMD (OR = 0.85, 95% CI 0.79-0.91, $P = 9.56 \times 10^{-7}$, $P(\text{FDR}) = 1.20 \times 10^{-6}$), and heel BMD (OR = 0.82, 95% CI 0.79-0.81, $P = 1.69 \times 10^{-39}$, $P(\text{FDR}) = 8.45 \times 10^{-39}$) on falling risk. No causal relationship was found for forearm BMD (OR = 1.02, 95% CI 0.94-1.11, $P = 0.64$, $P(\text{FDR}) = 0.64$). Replication datasets and CAUSE analysis provided causal evidence consistent with the main findings.

CONCLUSION: The study established a causal relationship between BMD at four different sites and the risk of falling, highlighting potential areas for targeted prevention strategies.

Language: en

Keywords: Fall; Bone mineral density; Linkage disequilibrium score; Mendelian randomization

Functional lower extremity strength influences stepping strategy in community-dwelling older adults during single and dual-task walking

Peoples BM, Harrison KD, Santamaría-Guzmán KG, Campos-Vargas SE, Monaghan PG, Roper JA. *Sci. Rep.* 2024; 14(1): e13379.

(Copyright © 2024, Nature Publishing Group)

DOI: 10.1038/s41598-024-64293-0

PMID: 38862689

Abstract

As age increases, a decline in lower extremity strength leads to reduced mobility and increased fall risks. This decline outpaces the age-related reduction in muscle mass, resulting in mobility limitations. Older adults with varying degrees of mobility-disability use different stepping strategies. However, the link between functional lower extremity strength and stepping strategy is unknown. Therefore, understanding how age-related reductions in functional lower extremity strength influence stepping strategy is vital to unraveling mobility limitations. Twenty participants (17F, 72 ± 6 years) were recruited and tested at a local community event. Participants were outfitted with inertial measurement units (IMU) and walked across a pressurized walkway under single and dual motor task conditions (walking with and without carrying a tray with water) at their usual and fast speeds. Participants were dichotomized into normal (11) or low functional strength groups (9) based on age-specific normative cutoffs using the instrumented 5-repetition Sit-to-Stand test duration. Our study reveals that older adults with normal strength prefer adjusting their step time during walking tasks, while those with reduced strength do not exhibit a preferred stepping strategy. This study provides valuable insights into the influence of functional lower extremity strength on stepping strategy in community-dwelling older adults during simple and complex walking tasks. These findings could aid in diagnosing gait deviations and developing appropriate treatment or management plans for mobility disability in older adults.

Language: en

Keywords: Humans; Aged; Female; Male; Aged, 80 and over; Mobility Limitation; *Walking/physiology; Gait; Mobility; *Independent Living; *Lower Extremity/physiology; *Muscle Strength/physiology; Dual-task; Gait/physiology; Lower extremity strength; Stepping strategy

Association of the @ctivehip tele-rehabilitation with the fear of falling of older adults with hip fracture and their family caregivers: secondary analysis of a non-randomised controlled trial

Prieto-Moreno R, Molina-García P, Ortiz-Piña M, Mora-Traverso M, Estévez-López F, Martín-Matillas M, Ariza-Vega P. J. Telemed. Telecare 2024; ePub(ePub): ePub.

(Copyright © 2024, Royal Society of Medicine Press)

DOI: 10.1177/1357633X241257972

PMID: 38836335

Abstract

INTRODUCTION: Osteoporotic hip fracture is a major health problem. Falls, the primary cause, might lead to a persistent fear of falling (FoF) among older adults, affecting their daily activities and rehabilitation. While in-person interventions exist, limited research is available on the effects of tele-rehabilitation on the FoF after a hip fracture. Thus, this study aims to test the association of the @ctivehip tele-rehabilitation programme on reducing the levels of FoF experienced by both older adults with hip fracture and their family caregivers.

METHODS: A non-randomised controlled trial (ClinicalTrials.gov; Identifier: NCT02968589) that compared a webpage-based tele-rehabilitation (@ctivehip) against usual care. Fear of falling was assessed using the Short Falls Efficacy Scale-International. Patients' functional status was evaluated using the Functional Independence Measure. Physical performance was assessed by the Timed Up and Go test and Short Physical Performance Battery. We conducted a per-protocol analysis as the primary outcome, and an intention-to-treat approach as secondary analysis.

RESULTS: A total of 71 patients with hip fracture (78.75 ± 6.12 years, 75% women) and their family caregivers participated. Participants in the intervention showed a higher decrease in FoF in comparison to those in the usual care (0.5 Cohen's d; $p = 0.042$). The reduction in FoF resulting from participation in the tele-rehabilitation programme was mediated by improvements in functional status by 79%. The @ctivehip programme did not decrease FoF of family caregivers.

DISCUSSION: @ctivehip is associated with a reduction of the FoF in older adults with hip fractures, but not in their family caregivers, with the reduction being mostly explained by improvements in the patients' functional status. Although the intervention seems promising, it should not be applied in clinical settings until confirmed by appropriate-designed randomised clinical trials.

Language: en

Keywords: hip fracture; telemedicine; Digital health; older patients; informal caregivers

Assessing the efficacy of the ARMOR Tool-Based Deprescribing Intervention for Fall Risk Reduction in Older Patients Taking Fall Risk-Increasing Drugs (DeFRID Trial): protocol for a randomized controlled trial

Priyadarshini R, Eerike M, Varatharajan S, Ramaswamy G, Raj GM, Cherian JJ, Rajendran P, Gunasekaran V, Rao SV, Konda VGR. JMIR Res. Protoc. 2024; 13: e55638.

(Copyright © 2024, JMIR)

DOI: 10.2196/55638

PMID: 38861709

Abstract

BACKGROUND: Falls in older patients can lead to serious health complications and increased health care costs. Fall risk-increasing drugs (FRIDs) are a group of drugs that may induce falls or increase the tendency to fall (ie, fall risk). Deprescribing is the process of withdrawal from an inappropriate medication, supervised by a health care professional, with the goal of managing polypharmacy and improving outcomes.

OBJECTIVE: This study aims to assess the effectiveness of a deprescribing intervention based on the Assess, Review, Minimize, Optimize, and Reassess (ARMOR) tool in reducing the risk of falls in older patients and evaluate the cost-effectiveness of deprescribing FRIDs.

METHODS: This is an open-label, parallel-group randomized controlled academic trial. Individuals aged 60-80 years who are currently taking 5 or more prescribed drugs, including at least 1 FRID, will be recruited. Demographic data, medical conditions, medication lists, orthostatic hypotension, and fall history details will be collected. Fall concern will be assessed using the Fall Efficacy Scale, and fall risk will be assessed by the Timed Up and Go test and Tinetti Performance-Oriented Mobility Assessment tool. In this study, all treating physicians will be randomized using a stratified randomization method based on seniority. Randomized physicians will do deprescribing with the ARMOR tool for patients on FRIDs. Participants will maintain diaries, and monthly phone follow-ups will be undertaken to monitor falls and adverse events. Physical assessments will be performed to evaluate fall risk every 3 months for a year. The rationality of prescription drugs will be evaluated using the World Health Organization's core indicators.

RESULTS: The study received a grant from the Indian Council of Medical Research-Safe and Rational Use of Medicine in October 2023. The study is scheduled to commence in April 2024 and conclude by 2026. Efficacy will be measured by fall frequency and changes in fall risk scores. Cost-effectiveness analysis will also include the incremental cost-effectiveness ratio calculation. Adverse events related to deprescription will be recorded.

CONCLUSIONS: This trial will provide essential insights into the efficacy of the ARMOR tool in reducing falls among the geriatric population who are taking FRIDs. Additionally, it will provide valuable information on the cost-effectiveness of deprescribing practices, offering significant implications for improving the well-being of older patients and optimizing health care resource allocation. The findings from this study will be pertinent for health care professionals, policy makers, and researchers focused on geriatric care and fall prevention strategies. TRIAL

REGISTRATION: Clinical Trials Registry - India CTRI/2023/12/060516;
<https://ctri.nic.in/Clinicaltrials/pubview2.php>. INTERNATIONAL REGISTERED REPORT
IDENTIFIER (IRRID): PRR1-10.2196/55638.

Language: en

Keywords: Humans; Aged; Female; Male; Middle Aged; Aged, 80 and over; Randomized Controlled Trials as Topic; Cost-Benefit Analysis; Polypharmacy; Risk Reduction Behavior; geriatric; falls; fall risk; older patients; *Accidental Falls/prevention & control; FRIDs; *Deprescriptions; ARMOR tool; Assess, Review, Minimize, Optimize, and Reassess; deprescribing; fall risk-increasing drugs

Risk factors for subsequent fractures in hip fracture patients: a nested case-control study

Song M, Wang Y, Jiang Y, Pi H, Lyu H, Gao Y. J. Orthop. Surg. Res. 2024; 19(1): e348.

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DOI: 10.1186/s13018-024-04833-6

PMID: 38867268

Abstract

BACKGROUND: The risk factors for subsequent fractures following an initial hip fracture are not entirely understood. This study examined the clinical characteristics of hip fracture patients to identify potential risk factors associated with a higher risk of experiencing subsequent fractures.

METHODS: We conducted a nested case-control study using data from the Chinese PLA General Hospital Hip Fracture Cohort between January 2008 and March 2022. The cases were individuals who experienced subsequent fractures following an initial hip fracture. Each case was matched with up to 2 controls who did not develop subsequent fractures. Important clinical factors were compared across groups, including traditional fracture risk factors and potential risk factors (e.g., comorbidities, falls risk, physical impairment, calcium or vitamin D use, and anti-osteoporosis medications). Conditional logistic regression analyses were used to evaluate the impact of these clinical features as potential risk factors for subsequent fractures.

RESULTS: A total of 96 individuals who suffered from subsequent fractures were matched with 176 controls. The median time between the initial hip fracture and the subsequent fracture was 2.1 years. The overall proportion of patients receiving anti-osteoporosis treatment after initial hip fracture was 25.7%. In the multivariable regression analysis, living in a care facility (OR = 3.78, 95%CI: 1.53-9.34), longer hospital stays (OR = 1.05, 95%CI: 1.00-1.11), and falls after discharge (OR = 7.58, 95%CI: 3.37-17.04) were associated with higher odds of subsequent fractures.

CONCLUSIONS: This study showed that living in a care facility, longer hospital stays, and falls after discharge may be independent risk factors for repeat fractures following an initial hip fracture. These findings could be used to identify and manage patients at high risk of subsequent fractures.

Language: en

Keywords: Humans; Risk Factors; Aged; Female; Male; Middle Aged; Risk factors; Aged, 80 and over; Length of Stay; Case-Control Studies; Osteoporosis; Hip fracture; Accidental Falls/statistics & numerical data; Osteoporosis/complications/epidemiology; *Hip Fractures/epidemiology/etiology; Anti-osteoporosis medications; Bone Density Conservation Agents/therapeutic use; Subsequent fracture

Risk analysis for subsequent fracture of osteoporotic fractures in Chinese women over age 60: a nationwide cross-sectional study

Tang N, Gao L, Song J, Li Y, Song M, Qiu C, Shao M, Chen J, Li S, Wang Q, Su Q, Gao Y. *Sci. Rep.* 2024; 14(1): e13319.

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PMID: 38858454

Abstract

Prevention of subsequent fracture is a major public health challenge in the field of osteoporosis prevention and treatment, and older women are at high risk for osteoporotic fractures. This study aimed to examine factors associated with subsequent fracture in older Chinese women with osteoporosis. We collected data on 9212 older female patients with osteoporotic fractures from 580 medical institutions in 31 provinces of China. Higher odds of subsequent fractures were associated with age of 70-79 years (OR 1.218, 95% CI 1.049-1.414), age \geq 80 (OR 1.455, 95% CI 1.222-1.732), index fracture site was vertebrae (OR 1.472, 95% CI 1.194-1.815) and hip (OR 1.286, 95% CI 1.041-1.590), index fracture caused by fall (OR 1.822, 95% CI 1.281-2.591), strain (OR 1.587, 95% CI 1.178-2.139), no inducement (OR 1.541, 95% CI 1.043-2.277), and assessed as high risk of fracture (OR 1.865, 95% CI 1.439-2.416), BMD T-score \leq -2.5 (OR 1.725, 95% CI 1.440-2.067), history of surgery (OR 3.941, 95% CI 3.475-4.471) and trauma (OR 8.075, 95% CI 6.941-9.395). Low risk of fall (OR 0.681, 95% CI 0.513-0.904), use of anti-osteoporosis medication (AOM, OR 0.801, 95% CI 0.693-0.926), and women who had received fall prevention health education (OR 0.583, 95% CI 0.465-0.730) associated with lower risk. The areas under the curve of the prediction model was 0.818. The sensitivity was 67.0% and the specificity was 82.0%. The prediction model showed a good ability to predict the risk of subsequent fracture in older women with osteoporotic fractures and are suitable for early self-measurement which may benefit post-fracture management.

Language: en

Keywords: Humans; Cross-Sectional Studies; Risk Factors; Aged; Female; Middle Aged; Risk Assessment; Aged, 80 and over; Osteoporosis; Older women; East Asian People; Bone Density; China/epidemiology; *Osteoporotic Fractures/epidemiology/etiology; Accidental Falls/statistics & numerical data; Osteoporosis/complications/epidemiology; Osteoporotic fractures; Subsequent fractures

Prediction of the future number of fall-related emergency medical services calls in older individuals

Uemura S, Nakayama R, Koyama M, Taguchi Y, Bunya N, Sawamoto K, Ohnishi H, Narimatsu E. *Int. J. Emerg. Med.* 2024; 17(1): e72.

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Abstract

BACKGROUND: Falls among older individuals contribute significantly to the rise in ambulance transport use. To recognize the importance of future countermeasures, we estimated the projected number and percentage of fall-related emergency medical service (EMS) calls.

METHODS: We examined the sex, age group, and location of falls among patients aged ≥ 65 years who contacted emergency services in Sapporo City from 2013 to 2021. Annual fall-related calls per population subgroup were calculated, and trends were analyzed. Four models were used to estimate the future number of fall-related calls from the 2025-2060 projected population: (1) based on the 2022 data, estimates from the 2013-2022 data using (2) Poisson progression, (3) neural network, (4) estimates from the 2013-2019 data using neural network. The number of all EMS calls was also determined using the same method to obtain the ratio of all EMS calls.

RESULTS: During 2013-2022, 70,262 fall-related calls were made for those aged ≥ 65 years. The rate was higher indoors among females and outdoor among males in most age groups and generally increased with age. After adjusting for age, the rate increased by year. Future estimates of the number of fall calls are approximately double the number in 2022 in 2040 and three times in 2060, with falls accounting for approximately 11% and 13% of all EMS calls in 2040 and 2060, respectively.

CONCLUSION: The number of fall-related EMS calls among older people is expected to increase in the future, and the percentage of EMS calls will also increase; therefore, countermeasures are urgently needed.

Language: en

Keywords: Falls; Emergency medical services; Older population; Future projection

Care partners' engagement in preventing falls for community-dwelling older people with dementia

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Abstract

BACKGROUND AND OBJECTIVES: Little is known about how to prevent falls in community-dwelling older people with dementia. Although their care partners adopt various behaviors to prevent their falls, it is unclear if these behaviors reduce falls for those with different levels of fall risk. **RESEARCH DESIGN AND METHODS:** Linking the 2015 and 2016 National Health and Aging Trends Study (NHATS) and the 2015 National Study of Caregiving (NSOC), we identified 390 community-dwelling older people with dementia with 607 care partners. We selected 26 NSOC items representing fall risk management (FRM) behaviors. We examined the prevalence and dimensionality of these behaviors and investigated associations between care partners' behaviors in 2015 (T1) and older people's falls in 2016 (T2) stratified by their fall incidence at T1, adjusting for covariates.

RESULTS: Five domains of FRM were identified: mobility and safety assistance, medical service coordination, health management, social service coordination, and accommodation. For those who did not fall at T1, mobility and safety assistance and social service coordination were each associated with an increased risk of falling at T2 (adjusted incidence rate ratio [aIRR]=1.39, 95% confidence interval [CI]=1.06-1.83, $p=0.019$, aIRR=1.25, 95% CI=1.01-1.55, $p=0.043$). For those who had fallen at T1, social service coordination was associated with a decreased risk of falling at T2 (aIRR=0.83, 95% CI=0.73-0.94, $p=0.004$).

DISCUSSION AND IMPLICATIONS: The different impacts of dementia care partners' FRM behaviors emphasize the need to address specific behaviors when involving care partners in preventing falls for older people with dementia at varying levels of fall risk.

Language: en

Keywords: Cognitive impairment; caregiving; fall prevention; health behaviors