

Safety Literature 14th August 2022

Annual risk of falls resulting in emergency department and hospital attendances for older people: an observational study of 781,081 individuals living in Wales (United Kingdom) including deprivation, frailty and dementia diagnoses between 2010 and 2020

Hollinghurst R, Williams N, Pedrick-Case R, North L, Long S, Fry R, Hollinghurst J. Age Ageing 2022; 51(8): afac176.

(Copyright © 2022, Oxford University Press)

DOI 10.1093/ageing/afac176 **PMID** 35932242

Abstract

BACKGROUND: falls are common in older people, but associations between falls, dementia and frailty are relatively unknown. The impact of the COVID-19 pandemic on falls admissions has not been studied.

AIM: to investigate the impact of dementia, frailty, deprivation, previous falls and the differences between years for falls resulting in an emergency department (ED) or hospital admission. **STUDY DESIGN:** longitudinal cross-sectional observational study. **SETTING:** older people (aged 65+) resident in Wales between 1 January 2010 and 31 December 2020.

METHODS: we created a binary (yes/no) indicator for a fall resulting in an attendance to an ED, hospital or both, per person, per year. We analysed the outcomes using multilevel logistic and multinomial models.

RESULTS: we analysed a total of 5,141,244 person years of data from 781,081 individuals. Fall admission rates were highest in 2012 (4.27%) and lowest in 2020 (4.27%). We found an increased odds ratio (OR [95% confidence interval]) of a fall admission for age (1.05 [1.05, 1.05] per year of age), people with dementia (2.03 [2.00, 2.06]) and people who had a previous fall (2.55 [2.51, 2.60]). Compared with fit individuals, those with frailty had ORs of 1.60 [1.58, 1.62], 2.24 [2.21, 2.28] and 2.94 [2.89, 3.00] for mild, moderate and severe frailty respectively. Reduced odds were observed for males (0.73 [0.73, 0.74]) and less deprived areas; most deprived compared with least OR 0.75 [0.74, 0.76].

CONCLUSIONS: falls prevention should be targeted to those at highest risk, and investigations into the reduction in admissions in 2020 is warranted.

Language: en

Keywords

dementia; COVID-19; frailty; older people; falls

Are virtual objective assessments of fall-risk feasible and safe for people with Parkinson's disease?

Afshari M, Hernandez AV, Nonnekes J, Bloem BR, Goetz CG. *Mov. Disord. Clin. Pract.* (Hoboken) 2022; 9(6): 799-804.

(Copyright © 2022, John Wiley and Sons)

DOI 10.1002/mdc3.13494 **PMID** 35937474

Abstract

BACKGROUND: Falls are inherent to Parkinson's disease (PD) progression, and risk assessment is mandatory for optimal long term management.

OBJECTIVE: To determine if the telehealth application of two observer-based, objective measures of fall-risk in PD-Five-Times-Sit-To-Stand (FTSTS) and 360° Rapid-Turns-Test (RTT)-is feasible and safe.

METHODS: Following in-clinic training, 15 people with Hoehn and Yahr Stage 2 (n = 8) and 3 (n = 7) PD, median MoCA score 25 (range 14-29), and subjective freezing-of-gait (n = 13), participated in four televisits with care partners biweekly for 10 weeks where virtual FTSTS/RTT assessments were performed.

RESULTS: Participants completed all protocol-driven 120 virtual FTSTS and 60 RTT assessments with effective ratability (feasibility) and zero adverse events (safety). 22% virtual FTSTS and 55% RTT met criteria for high fall-risk designation.

CONCLUSIONS: Objective fall-risk assessment with virtual FTSTS and RTT through telehealth among HY2-3 PD patients, with varying motor and cognitive function, is feasible and safe following introductory in-clinic training.

Language: en

Keywords

Parkinson's disease; telemedicine

Can the 1-leg standing test be replaced by self-reported balance in the first-time injurious fall screening tool?

Frisendahl N, Ek S, Rosendahl E, Franzén E, Boström AM, Welmer AK. *J. Geriatr. Phys. Ther.* 2022; ePub(ePub): ePub.

(Copyright © 2022, American Physical Therapy Association)

DOI 10.1519/JPT.0000000000000362 **PMID** 35947043

Abstract

BACKGROUND AND PURPOSE: The First-time Injurious Fall (FIF) screening tool was created to identify fall risk in community-living older men and women, who may be targets for primary preventive interventions. The FIF tool consists of 3 self-reported questions and 1 physical test (1-leg standing balance). The purpose of this study was to examine the predictive ability of the FIF tool and a modified FIF tool (in which 1-leg standing is replaced by self-reported balance) for first-time injurious falls.

METHODS: A cohort of 1194 community-living people 60 years and older from the Swedish National Study on Aging and Care in Kungsholmen (SNAC-K), Sweden, was followed longitudinally for 5 years. Data on injurious falls were collected from registered data and were defined as receipt of care after a fall. The predictive ability of the FIF tool and the m-FIF tool was explored using Harrell's C statistic, stratified by sex.

RESULTS AND DISCUSSION: The injurious fall rate per 1000 person-years was 54.9 (95% CI: 47.22-63.78) for women and 36.3 (95% CI: 28.84-45.78) for men. The predictive ability for women and men according to Harrell's C statistic was 0.70 and 0.71 for the FIF tool and the m-FIF tool. The predictive ability was 0.70 and 0.69 for 1-leg standing, and 0.65 and 0.60 for self-reported balance problems.

CONCLUSIONS: The m-FIF tool presented similar predictive ability as the FIF tool regarding first-time injurious falls. This finding could extend the usefulness of the tool to other settings, such as to electronic health (eHealth). A quickly and easily administered screening tool can help physical therapists to identify people with a high risk of falling who may need to undergo a more comprehensive fall risk assessment.

Language: en

Characteristics of fallers who later sustain a hip fracture: a NOREPOS study

Søgaard AJ, Aga R, Holvik K, Meyer HE. Osteoporos. Int. 2022; ePub(ePub): ePub.

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DOI 10.1007/s00198-022-06490-z PMID 35927464

Abstract

Fall prevention programs have shown inconclusive results concerning hip fracture reduction. We found that fallers with poor health, low societal participation, and use of psychotropics/painkillers had a threefold to fivefold increased hip fracture risk compared to non-fallers without these risk factors. This may help target fall prevention towards high-risk individuals.

INTRODUCTION: To investigate whether self-reported information on health, societal participation, and drug use in older people, easily obtainable by health care providers, contribute to predict future hip fracture beyond self-reported falls.

METHODS: We used data from 3801 women and 6439 men aged 70-79 years participating in population-based studies in five counties in Norway 2000-2003. Height and weight were measured. Socioeconomic status, lifestyle, health status, and history of falling were self-reported through questionnaires. Falls last year were dichotomized into one or more versus no falls. Hip fractures were identified by linkage to hospital data with follow-up through 2013. Hazard ratios (HR) with 95% confidence intervals (95% CI) for hip fracture by combinations of risk factors with history of falling were estimated using Cox proportional hazards regression.

RESULTS: More women (32.4%) than men (27.7%) reported one or more falls during the previous year, and 17.9% of women (n = 682) and 8.9% of men (n = 572) suffered a hip fracture during median 11.6 years of follow-up. Poor health, low societal participation, and use of psychotropics/analgesics among fallers were strong predictors of hip fracture. The presence of all three risk factors and history of falling was associated with HR 2.92 (95% CI 2.10-4.05) for hip fracture in women and HR 4.60 (95% CI 2.71-7.81) in men compared to non-fallers without these factors.

CONCLUSION: Our study indicates that self-assessment of health, information about activities outside home, and drug use among fallers far better identify high risk of hip fracture in older people than information about falls alone.

Language: en

Keywords

Risk factor; Prediction; Fall; Hip fracture

Effect of the STRIDE fall injury prevention intervention on falls, fall injuries, and health-related quality of life

Ganz DA, Yuan AH, Greene EJ, Latham NK, Araujo K, Siu AL, Magaziner J, Gurwitz JH, Wu AW, Alexander NB, Wallace RB, Greenspan SL, Rich J, Volpi E, Waring SC, Dykes PC, Ko F, Resnick NM, McMahon SK, Basaria S, Wang R, Lu C, Esserman D, Dziura J, Miller ME, Trivison TG, Peduzzi P, Bhasin S, Reuben DB, Gill TM. *J. Am. Geriatr. Soc.* 2022; ePub(ePub): ePub.

(Copyright © 2022, John Wiley and Sons)

DOI 10.1111/jgs.17964 PMID 35932279

Abstract

BACKGROUND: Falls are common in older adults and can lead to severe injuries. The Strategies to Reduce Injuries and Develop Confidence in Elders (STRIDE) trial cluster-randomized 86 primary care practices across 10 health systems to a multifactorial intervention to prevent fall injuries, delivered by registered nurses trained as falls care managers, or enhanced usual care. STRIDE enrolled 5451 community-dwelling older adults age ≥ 70 at increased fall injury risk.

METHODS: We assessed fall-related outcomes via telephone interviews of participants (or proxies) every 4 months. At baseline, 12 and 24 months, we assessed health-related quality of life (HRQOL) using the EQ-5D-5L and EQ-VAS. We used Poisson models to assess intervention effects on falls, fall-related fractures, fall injuries leading to hospital admission, and fall injuries leading to medical attention. We used hierarchical longitudinal linear models to assess HRQOL.

RESULTS: For recurrent event models, intervention versus control incidence rate ratios were 0.97 (95% confidence interval [CI], 0.93-1.00; $p = 0.048$) for falls, 0.93 (95% CI, 0.80-1.08; $p = 0.337$) for self-reported fractures, 0.89 (95% CI, 0.73-1.07; $p = 0.205$) for adjudicated fractures, 0.91 (95% CI, 0.77-1.07; $p = 0.263$) for falls leading to hospital admission, and 0.97 (95% CI, 0.89-1.06; $p = 0.477$) for falls leading to medical attention. Similar effect sizes (non-significant) were obtained for dichotomous outcomes (e.g., participants with ≥ 1 events). The difference in least square mean change over time in EQ-5D-5L (intervention minus control) was 0.009 (95% CI, -0.002 to 0.019; $p = 0.106$) at 12 months and 0.005 (95% CI, -0.006 to 0.015; $p = 0.384$) at 24 months.

CONCLUSIONS: Across a standard set of outcomes typically reported in fall prevention studies, we observed modest improvements, one of which was statistically significant. Future work should focus on patient-, practice-, and organization-level operational strategies to increase the real-world effectiveness of interventions, and improving the ability to detect small but potentially meaningful clinical effects. **CLINICALTRIALS:** gov identifier: NCT02475850.

Language: en

Keywords

falls; care management; health-related quality of life; older persons; pragmatic trials

Effectiveness of exergaming-based interventions for mobility and balance performance in older adults with Parkinson's disease: systematic review and meta-analysis of randomised controlled trials

Zhang J, Luximon Y, Pang MYC, Wang H. Age Ageing 2022; 51(8): afac175.

(Copyright © 2022, Oxford University Press)

DOI 10.1093/ageing/afac175 PMID 35930726

Abstract

BACKGROUND: exergaming-based interventions (EbIs) have been proposed to improve older adults' mobility and balance performance. However, the effectiveness of such interventions for older adults with Parkinson's disease (OAPD) remains unclear.

METHODS: seven databases (Web of Science, Medline, Academic Search Premier, CINAHL Complete, PsycINFO, PsychARTICLE and PubMed) were searched up to 7 April 2022. We assessed mobility and balance performance between EbIs groups and control groups or traditional physical training interventions (TPTIs) groups by comparing the outcomes of the Timed Up and Go (TUG), 6-Minute Walk Test (6MWT), Berg Balance Scale (BBS), gait velocity, stride length and Functional Gait Assessment (FGA).

RESULTS: we scanned 1,190 articles and meta-analysed 19 trials (sample size = 781). In general, the results revealed statistical differences between EbIs groups and TPTIs groups in the TUG [mean difference (MD) = -1.030 s; 95% confidence interval (CI) = -2.029 to -0.031; P = 0.043; high quality of evidence], 6MWT (MD = 63.483 m; 95% CI = 9.542 to 117.425; P = 0.021; moderate quality of evidence), BBS (MD = 2.129; 95% CI = -1.293 to 2.965; P < 0.001; high quality of evidence) and FGA (MD = 2.099 95% CI = -0.306 to 3.893; P = 0.022; moderate quality of evidence). No significant difference was discovered between EbIs groups and TPTIs groups in enhancing gait velocity and stride length.

CONCLUSIONS: EbIs are statistically better than TPTIs in improving OAPD's performance in TUG, 6MWT, BBS and FGA, whereas only the change between EbIs and TPTIs in 6MWT can reach the value of minimal clinically important difference. Further studies are needed to better assess the effectiveness of exergaming-based interventions.

Language: en

Keywords

older adults; older people; systematic review; Parkinson's disease; balance performance; exergaming; mobility performance

Engagement of older adults in STRIDE's multifactorial fall injury prevention intervention

McMahon SK, Greene EJ, Latham N, Peduzzi P, Gill TM, Bhasin S, Reuben DB. *J. Am. Geriatr. Soc.* 2022; ePub(ePub): ePub.

(Copyright © 2022, John Wiley and Sons)

DOI 10.1111/jgs.17983 **PMID** 35924574

Abstract

BACKGROUND: Evidence-based multifactorial fall prevention interventions in clinical practice have been less effective than expected. One plausible reason is that older adults' engagement in fall prevention care is suboptimal.

METHODS: This was a post-hoc analysis of 2403 older adults' engagement in a multifactorial fall prevention intervention in the Strategies to Reduce Injuries and Develop Confidence in Elders (STRIDE) pragmatic trial. Based on the direct clinical care level of the Patient and Family Continuum of Engagement (CE) framework, three indicators of progressively interactive engagement were assessed: (1) Consultation (receiving information), (2) Involvement (prioritizing risks), and (3) Partnership (identifying prevention actions). Drop off at each step was determined as well as predictors of engagement.

RESULTS: The participants' engagement waned with increasingly interactive CE domains. Although all participants received information about their positive fall risk factors (consultation) and most (51%-96%) prioritized them (involvement), fewer participants (33%-55%) identified fall prevention actions (partnership) for most of their risk factors, except for strength gait or balance problems (95%). More participants (70%) identified home exercises than other actions. Finally, fall prevention actions were identified more commonly among participants who received two visits compared to one (OR = 2.33 [95% CI, 2.06-2.64]), were ≥ 80 years old (OR = 1.83 [95% CI, 1.51-2.23]), and had fewer fall risk factors (OR = 0.90 [95% CI, 0.83-0.99]).

CONCLUSIONS: The drop-off in participants' engagement based on the level of their interaction with clinicians suggests that future multifactorial fall prevention interventions need to be more focused on interactive patient-clinician partnerships that help older adults increase and maintain fall prevention actions. Our analyses suggest that more frequent contact with clinicians and more monitoring of the implementation and outcomes of Fall Prevention Care Plans could potentially improve engagement and help older adults maintain fall prevention actions.

Language: en

Keywords

Older Adults; Fall Prevention; Patient Engagement; Primary Care

Evaluating the discriminatory power of the velocity field diagram and timed-up-and-go test in determining the fall status of community-dwelling older adults: a cross-sectional observational study

Ibeneme SC, Eze JC, Okonkwo UP, Ibeneme GC, Fortwengel G. BMC Geriatr. 2022; 22(1): e658.

(Copyright © 2022, Holtzbrinck Springer Nature Publishing Group - BMC)

DOI 10.1186/s12877-022-03282-2 **PMID** 35948869

Abstract

BACKGROUND: Systematic reviews demonstrated that gait variables are the most reliable predictors of future falls, yet are rarely included in fall screening tools. Thus, most tools have higher specificity than sensitivity, hence may be misleading/detrimental to care. Therefore, this study aimed to determine the validity, and reliability of the velocity field diagram (VFD - a gait analytical tool), and the Timed-up-and-go test (TUG)-commonly used in Nigeria as fall screening tools, compared to a gold standard (known fallers) among community-dwelling older adults.

METHOD: This is a cross-sectional observational study of 500 older adults (280 fallers and 220 non-fallers), recruited by convenience sampling technique at community health fora on fall prevention. Participants completed a 7-m distance with the number of steps and time it took determined and used to compute the stride length, stride frequency, and velocity, which regression lines formed the VFD. TUG test was simultaneously conducted to discriminate fallers from non-fallers. The cut-off points for falls were: TUG times ≥ 13.5 s; VFD's intersection point of the stride frequency, and velocity regression lines ($E(1) \geq 3.5$ velots. The receiver operating characteristic (ROC) area under the curves (AUC) was used to explore the ability of the $E(1) \geq 3.5$ velots to discriminate between fallers and non-fallers. The VFD's and TUG's sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) were determined. Alpha was set at $p < 0.05$.

RESULTS: The VFD versus TUG sensitivity, specificity, PPV and NPV were 71%, 27%, 55%, and 42%, versus 39%, 59%, 55%, and 43%, respectively. The ROC's AUC were 0.74(95%CI:0.597,0.882, $p = 0.001$) for the VFD. The optimal categorizations for discrimination between fallers/non-fallers were ≥ 3.78 versus ≤ 3.78 for VFD (fallers versus non-fallers prevalence is 60.71% versus 95.45%, respectively), with a classification accuracy or prediction rate of 0.76 unlike TUG with AUC = 0.53 (95% CI:0.353,0.700, $p = 0.762$), and a classification accuracy of 0.68, and optimal characterization of ≥ 12.81 s versus ≤ 12.81 (fallers and non-fallers prevalence = 92.86% versus 36.36%, respectively).

CONCLUSION: The VFD demonstrated a fair discriminatory power and greater reliability in identifying fallers than the TUG, and therefore, could replace the TUG as a primary tool in screening those at risk of falls.

Language: en

Keywords

Falls; Reliability; Validity; Community-dwelling older adults; Discriminatory power; Timed-up-and-go test; Velocity field diagram

Frailty syndrome and risks for falling in the elderly community

Taguchi CK, Menezes PL, Melo ACS, Santana LS, Conceição WRS, Souza GF, Araújo BCL, Silva AR. *Codas* 2022; 34(6): e20210025.

(Copyright © 2022, Sociedade Brasileira de Fonoaudiologia)

DOI 10.1590/2317-1782/20212021025pt **PMID** 35946721

Abstract

PURPOSE: To identify the prevalence of Frailty Syndrome in the elderly and the relationship with risk of falling.

METHODS: Descriptive, cross-sectional, and analytical clinical study. One hundred and one volunteers over 60 years old were submitted to audiological evaluation, Dynamic Gait Index - Brazilian brief (DGI), Timed Up and Go (TUG) and Edmonton Fragility Scale (EFE) that verified, respectively, hearing thresholds, frailty syndrome, functional and dynamic balance, and risk of falling. The simple percentual distribution, the Wilcoxon's test and the Bivariate Correlation with Pearson's coefficient were used for statistical analysis. Limits equal to or less than 1.0 and 5.0% were adopted.

RESULTS: EFE identified 22.8% of volunteers as fragile and 22.8% as vulnerable. DGI and TUG found 34.6% and 84.1% of at risk for falls, respectively. Significant correlations between EFE and DGI ($p < 0.01$), EFE and TUG ($p < 0.01$), and DGI and TUG ($p < 0.01$) were observed. Pearson's coefficient between EFE and DGI, EFE and TUG, and DGI and TUG were -0.26, -0.41, and 0.46, respectively. An association between DGI and TUG and age ($p < 0.01$) was identified. No correlation between EFE and sex or age was found.

CONCLUSION: Frailty and pre-frailty were identified in a significant segment of the volunteers, especially in the oldest subjects. Functional and dynamic balance were moderately correlated with frailty, which demonstrated that frailty syndrome increases the risk of falls.

Language: en

Keywords

Aged; Humans; Middle Aged; Cross-Sectional Studies; Gait; *Accidental Falls/prevention & control; *Frailty/diagnosis/epidemiology; Frail Elderly; Geriatric Assessment; Postural Balance

History of falls alters movement smoothness and time taken to complete a functional mobility task in the oldest-old: a case-control study

Figueiredo AI, Balbinot G, Brauner FO, Schiavo A, de Souza Urbanetto M, Mestriner RG. *Exp. Gerontol.* 2022; ePub(ePub): ePub.

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DOI 10.1016/j.exger.2022.111918 PMID 35944820

Abstract

BACKGROUND: Mobility smoothness assessed by the spectral arc length (SPARC) may reflect the complex biomechanical alterations that occur with aging and may help detect functional mobility changes after experiencing falls. Here, we sought to explore whether smoothness of angular velocities of the trunk measured using SPARC metrics in the instrumented timed-up-and-go (iTUG) test are associated with a history of falls in the oldest-old.

METHODS: A case-control study. The sample consisted of 64 community-dwelling oldest-old individuals who underwent the following assessments: clinical and sociodemographic questionnaire, Mini Mental State Examination (MMSE), Falls Efficacy-questionnaire International (FESI), the Activities-specific Balance Confidence (ABC), Functional Reaching Test (FRT), and the iTUG test. We used an inertial measurement unit (IMU) to obtain trunk angular velocities from the IMU's gyroscope, which was used to calculate mobility smoothness (SPARC).

RESULTS: Standard deviation of the mobility smoothness around the anteroposterior axis of rotation (SPARC roll SD) (OR: 6.15 / CI 95 % = 1.58-23.94) and duration (OR: 1.11 / CI 95 % = 1.09-1.22) in the full iTUG test were associated with a history of falls in oldest-old. Using solely the full iTUG duration (59.19 ± 2.18) or SPARC (61.87 ± 2.40) resulted in lower probability to detect a history of falls in comparison with the combined measurement (66.21 ± 2.50).

CONCLUSION: SPARC roll SD in the full iTUG may be a relevant biomarker to detect mobility smoothness changes in the oldest-old. This study provides evidence the oldest-old with a history of falls may change their functional mobility, in terms of movement duration and smoothness.

Language: en

Keywords

Falls; Gait; Mobility smoothness; Motor control

Item distribution of the Berg Balance Scale in older adults with hip fracture: a Rasch analysis

Takeda R, Miyata K, Tamura S, Kobayashi S, Iwamoto H. *Physiother. Theory Pract.* 2022; ePub(ePub): ePub.

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DOI 10.1080/09593985.2022.2109541 **PMID** 35930439

Abstract

INTRODUCTION: Balance impairment occurs after a hip fracture, but the characteristics of the impairment are not clear.

OBJECTIVE: To investigate the uni-dimensionality, fit statistics, and item difficulty of the Berg Balance Scale (BBS) in older adults with hip fracture by conducting a Rasch analysis.

METHODS: This was an observational cross-sectional study. The 254 participants were all \geq 65 years old and had been hospitalized for rehabilitation after a unilateral hip fracture incurred during a fall. We collected their BBS scores at the time of hospital discharge and conducted a Rasch analysis to examine the uni-dimensionality, fit statistics, and item difficulty.

RESULTS: The principal component analysis (PCA) of the Rasch model demonstrated that the BBS is uni-dimensional. The information-weighted mean square (MnSq) fit statistic was within the range of fit criteria for all items. The underfit item of the outlier-sensitive MnSq fit statistics was "Standing unsupported eyes closed" with the MnSq of 2.06. The difficult items were in order of logits: "Standing on one leg" (logits = 4.01); "Step tool" (logits = 2.74); and "Turn 360°" (logits = 2.61).

CONCLUSION: The BBS is uni-dimensional and conforms with the Rasch model. The BBS most difficult items for older adults with a hip fracture required one-legged support and dynamic balance.

Language: en

Keywords

balance; hip fracture; Berg Balance Scale; rasch analysis

Lower extremity joint compensatory effects during the first recovery step following slipping and stumbling perturbations in young and older subjects

Ren X, Lutter C, Keibach M, Bruhn S, Bader R, Tischer T. BMC Geriatr. 2022; 22(1): e656.

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DOI 10.1186/s12877-022-03354-3 PMID 35948887

Abstract

BACKGROUND: The lower extremity may play a crucial role in compensating for gait perturbations. The study aimed to explore the mechanism of perturbation compensation by investigating the gait characteristics and lower extremity joint moment effects in young (YS) and older subjects (OS) during the first recovery gait following slipping (slipping_Rec1) and stumbling (stumbling_Rec1).

METHOD: An automatic perturbation-triggered program was developed using D-Flow software based on the Gait Real-time Analysis Interactive Lab to induce the two aforementioned perturbations. Marker trajectories and ground reaction forces were recorded from 15 healthy YS (age: 26.53 ± 3.04 years; body height: 1.73 ± 0.07 m; body mass: 66.81 ± 11.44 kg) and 15 healthy OS (age: 68.33 ± 3.29 years; body height: 1.76 ± 0.10 m; body mass: 81.13 ± 13.99 kg). The Human Body Model was used to compute the variables of interest. One-way analysis of variance and independent samples t-test statistical analyses were performed.

RESULTS: In slipping_Rec1 and stumbling_Rec1, the change in gait pattern was mainly reflected in a significant increase in step width, no alterations in step length and stance/swing ratio were revealed. Based on perturbed task specificity, lower extremity joint moments increased or decreased at specific phases of the gait cycle in both YS and OS in slipping_Rec1 and stumbling_Rec1 compared to normal gait. The two perturbed gaits reflected the respective compensatory requirements for the lower extremity joints, with both sagittal and frontal joint moments producing compensatory effects. The aging effect was not reflected in the gait pattern, but rather in the hip extension moment during the initial stance of slipping_Rec1.

CONCLUSIONS: Slipping appears to be more demanding for gait recovery than stumbling. Gait perturbation compensatory mechanisms for OS should concentrate on ankle strategy in the frontal plane and counter-rotation strategy around the hip.

Language: en

Keywords

Aging; First recovery step; Joint dynamics; Spatiotemporal parameters; Treadmill perturbation

Risk of falls in HIV-infected patients on antiretroviral therapy and its associated factors

Wahyudi ER, Putri RF, Yuniastuti E, Shatri H. HIV AIDS (Auckl) 2022; 14: 355-363.

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DOI 10.2147/HIV.S372204 **PMID** 35942410

Abstract

PURPOSE: Fall is one of the geriatric syndromes and a significant public health concern, which causes potentially severe consequences among the elderly. Geriatric syndromes are common among PLHIV and affect younger age than the general population. This study attempted to identify the risk of falls in PLHIV on antiretroviral therapy (ART) and its related factors among older adults with HIV infection.

METHODS: This cross-sectional study was conducted from December 2019 to May 2020 among PLHIV aged ≥ 40 years who received ART for at least 6 months in HIV Integrated Clinic, Cipto Mangunkusumo Hospital, Jakarta. Bivariate and multivariate analyses were performed using Poisson regression with robust estimator using STATA version 12.0.

RESULTS: A total of 102 participants mainly consisted of males (83.3%) with a median age of 45 (IQR 5) years. The risk of fall was detected in 52% of these participants. PLHIV who have history of falls, current CD4 below 200 cells/mm³, and pre-frail-frail status were associated with an increased risk of falls in the future. An LPV/r-based regimen was found to be a protective factors of risk of falls among PLHIV.

CONCLUSION: History of falls, current CD4 below 200 cells/mm³, and pre-frail and frail status were identified as factors associated with a greater risk of fall among PLHIV.

Language: en

Keywords

frailty; falls; HIV; geriatric; antiretroviral

Seasonality affects elderly hip fracture mortality risk during the COVID-19 pandemic

Esper GW, Meltzer-Bruhn AT, Ganta A, Egol KA, Konda SR. *Cureus* 2022; 14(7): e26530. (Copyright © 2022, Curēus)

DOI 10.7759/cureus.26530 PMID 35928394

Abstract

Background The incidence of geriatric hip fractures, respiratory infections (e.g., coronavirus disease 2019 (COVID-19), influenza), and mortality is higher during the fall and winter. The purpose of this study is to assess whether the addition of seasonality to a validated geriatric inpatient mortality risk tool will improve the predictive capacity and risk stratification for geriatric hip fracture patients. We hypothesize that seasonality will improve the predictive capacity.

METHODology Between October 2014 and August 2021, 2,421 patients >55-year-old treated for hip fracture were analyzed for demographics, date of presentation, COVID-19 status (for patients after February 2020), and mortality. Patients were grouped by season based on their admission dates into the following four cohorts: fall (September–November), winter (December–February), spring (March–May), and summer (June–August). Patients presenting during the fall/winter and spring/summer were compared. The baseline Score for Trauma Triage in the Geriatric and Middle-Aged (STTGMA) tool for hip fractures (STTGMAHIP_FX_SCORE) and the seasonality iteration (STTGMA_SEASON) were also compared. Sub-analysis was conducted on 687 patients between February 2020 and August 2021 amid the COVID-19 pandemic. The baseline score (STTGMAHIP_FX_SCORE) and the COVID-19 iteration (STTGMACOVID_ORIGINAL_2020) were modified to include seasonality (STTGMA_COVID/SEASON). Patients were stratified by risk score and compared. The predictive ability of the models was compared using DeLong's test.

RESULTS For the overall cohort, patients who presented during the fall/winter had a higher rate of inpatient mortality (2.87% vs. 1.25%, $p < 0.01$). STTGMA_SEASON improved the predictive capacity for inpatient mortality compared to STTGMAHIP_FX_SCORE but not significantly (0.773 vs. 0.672, $p = 0.105$). On sub-analysis, regression weighting showed a coefficient of 0.643, with fall and winter having a greater absolute effect size (fall = 2.572, winter = 1.929, spring = 1.286, summer = 0.643). STTGMA_COVID/SEASON improved the predictive capacity for inpatient mortality compared to STTGMAHIP_FX_SCORE (0.882 vs. 0.581, $p < 0.01$) and STTGMACOVID_ORIGINAL_2020 (0.882 vs. 0.805, $p = 0.04$). The highest risk quartile contained 89.5% of patients who expired during their index inpatient hospitalization ($p < 0.01$) and 68.2% of patients who died within 30 days of discharge ($p < 0.01$).

CONCLUSIONS Seasonality may play a role in both the incidence and impact of COVID-19 and additional respiratory infections. Including seasonality improves the predictive capacity and risk stratification of the STTGMA tool during the COVID-19 pandemic. This allows for effective triage and closer surveillance of high-risk geriatric hip fracture patients by better accounting for the increased respiratory infection incidence and the associated mortality risk seen during fall and winter.

Language: en

Keywords

hip fracture; covid-19; geriatric; risk stratification; seasonality

The Otago Exercise Program compared to falls prevention education in Zuni elders: a randomized controlled trial

Waters DL, Popp J, Herman C, Ghahate D, Bobelu J, Pankratz VS, Shah VO. *BMC Geriatr.* 2022; 22(1): e652.

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DOI 10.1186/s12877-022-03335-6 PMID 35945496

Abstract

BACKGROUND: When a Zuni elder sustains a fall-related injury, the closest tribal skilled nursing facility is 100 miles from the Pueblo and no physical therapy services are available. Thus, fall prevention strategies as a primary intervention to avert injurious falls and preserve aging in place are needed. The objective of the study is to compare the effectiveness of a community health representative (CHR)-delivered, culturally-adapted Otago Exercise Program (OEP) fall prevention program compared to the standard of care education-based fall risk management.

METHODS: "Standing Strong in Tribal Communities: Assessing Elder Falls Disparity" is mixed-methods research with a randomized controlled trial. The CHRs will be trained to deliver the culturally-adapted OEP trial and offer advantages of speaking "Shiwi" (Zuni tribal language) and understanding Zuni traditions, family structures, and elders' preferences for receiving health information. Focus groups will be conducted to assure all materials are culturally appropriate, and adapted. A physical therapist will train CHRs to screen elders for falls risk and to deliver the OEP to the intervention group and education to the control group. Up to 400 Zuni elders will be screened by the CHRs for falls risk and 200 elders will be enrolled into the study (1:1 random allocation by household). The intervention is 6 months with measurements at baseline, 3, 6 and 12 months. The primary outcome is improved strength and balance (timed up and go, sit to stand and 4 stage balance test), secondary outcomes include falls incidence, self-efficacy using Attitudes to Falls-Related Interventions Scale, Medical Outcomes Study Short Form 12 (SF-12v2) and Self-Efficacy for Managing Daily Activities.

DISCUSSION: Fall prevention for Zuni elders was identified as a tribal priority and this trial is built upon longstanding collaborations between the investigative team, Zuni tribal leaders, and multiple tribal health programs. Delivery by the CHRs make this model more acceptable, and thus, more sustainable long term. This study has the potential to change best practice for elder care in tribal and rural areas with limited access to physical therapist-delivered fall prevention interventions and aligns with tribal goals to avert fall-related injury, reduce healthcare disparity, and preserve elder's independence. **TRIAL REGISTRATION:** NCT04876729.

Language: en

Keywords

Older adults; American Indians; Fall prevention; Strength and balance

Frequency and characteristics of falls, fall-related injuries, and fear of falling among wheelchair users with spinal cord injury

Abou L, Rice LA. J. Spinal Cord Med. 2022; ePub(ePub): ePub.

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DOI 10.1080/10790268.2022.2097995 **PMID** 35943367

Abstract

CONTEXT/OBJECTIVE: To investigate the frequency and characteristics of falls, fall-related injuries, and fear of falling (FOF) among non-ambulatory individuals with spinal cord injury (SCI).

METHODS: This is a cross-sectional study design that included 59 non-ambulatory individuals with SCI. Participants completed a survey on demographics, SCI characteristics (type of injury, level of injury, and time since injury), FOF, activities curtailment due to FOF, and frequency of falls and fall-related injuries in the past 6 months. Characteristics of the most recent falls and fall-related injuries were also collected. A directed content analysis was used to analyze qualitative data.

RESULTS: Overall, 63% of the study participants reported falling at least once, 46.7% reported injuries after falls, and 73% reported FOF during the previous 6 months. Participants commonly reported falling inside of the house (74.6%), during transfers (43.2%), and associated with obstacles on the way (54.5%) or surface conditions (36.4%). Almost half of the participants (42.3%) reported never received education on fall prevention from a healthcare professional.

CONCLUSIONS: The results confirm that falls, fall-related injuries, and FOF are a common concern in this population. These findings contribute to the knowledge base for the future development of fall prevention programs specific for non-ambulatory individuals with SCI.

Language: en

Keywords

Injury; Falls; Fear of falling; Spinal cord injuries; Wheelchair

Opioid initiation and the hazard of falls or fractures among older adults with varying levels of central nervous system depressant burden

Guan Q, Men S, Juurlink DN, Bronskill SE, Wunsch H, Gomes T. *Drugs Aging* 2022; ePub(ePub): ePub.

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DOI 10.1007/s40266-022-00970-x PMID 35945484

Abstract

BACKGROUND: Co-prescription of opioids with other central nervous system (CNS) depressants is common but the combination may increase the risk for adverse events such as falls and fractures, particularly among older adults. We explored the risk of fall- or fracture-related hospital visits after opioid initiation among older adults with varying degrees of concomitant CNS depressant burden.

METHODS: We used population-based administrative health data from Ontario, Canada, to examine the relationship between hospital visits for falls or fractures at different levels of CNS burden among individuals aged 66 and older who started prescription opioids between March 1, 2008, and March 31, 2019. For comparison, we identified individuals starting prescription non-steroidal anti-inflammatory drugs (NSAIDs). The outcome was a hospital visit for falls or fractures within 14 days after starting analgesic therapy. We stratified the cohort according to additional CNS burden: none, low (one concurrent CNS depressant drug class) and high (≥ 2 concurrent CNS depressant classes) on the index date. We balanced opioid and NSAID recipients using inverse probability of treatment weighting and reported weighted hazard ratios from Cox proportional hazards models. We then used pairwise comparisons to determine differences between hazard ratios at different levels of CNS burden.

RESULTS: The cohort included 1,066,692 older adults, with 562,692 new opioid recipients and 504,000 new NSAID recipients. Among opioid recipients, 83 % had no additional CNS burden, 13 % had low burden and 4 % had high burden. The short-term rate of falls or fractures for new opioid recipients increased by CNS burden from 97 per 1000 person-years (no burden) to 233 per 1000 person-years (high CNS burden). Opioid recipients had a similarly elevated hazard of falls or fractures within each CNS burden level compared to NSAID recipients (adjusted hazard ratio [aHR] 1.62, 95 % CI 1.50-1.76 for no burden; aHR 1.69, 95 % CI 1.45-1.97 for low burden; aHR 1.40, 95 % CI 1.08-1.82 for high burden).

CONCLUSION: Among older adults, initiation of opioids is associated with an increased hazard of falls; however, this hazard is not modified by different levels of CNS depressant burden. This suggests that it remains important for physicians, patients, and caregivers to be vigilant when starting new opioid therapy regardless of other CNS medications taken concurrently.

Language: en

Patient characteristics and diagnostic tests associated with syncopal falls: a southwestern surgical congress multicenter study

Lee JS, Khan AD, Quinn CM, Colborn K, Patel DC, Barmparas G, Margulies DR, Waller CJ, Kallies KJ, Fitzsimmons AJ, Kothari SN, Raines AR, Mahnken H, Dunn J, Zier L, McIntyre RCJ, Urban S, Coleman JR, Campion EM, Burlew CC, Schroepfel TJ. *Am. J. Surg.* 2022; ePub(ePub): ePub.

(Copyright © 2022, Elsevier Publishing)

DOI 10.1016/j.amjsurg.2022.07.018 **PMID** 35940931

Abstract

BACKGROUND: Patients suspected of syncope frequently undergo laboratory and imaging studies to determine the etiology of the syncope. Variability exists in these workups across institutions. The purpose of this study was to evaluate the utilization and diagnostic yield of these workups and the patient characteristics associated with syncopal falls.

METHODS: A multi-institutional retrospective review was performed on adult patients admitted after a fall between 1/2017-12/2018. Syncopal falls were compared to non-syncopal falls.

RESULTS: 4478 patients were included. There were 795 (18%) patients with a syncopal fall. Electrocardiogram, troponin, echocardiogram, CT angiography (CTA), and carotid ultrasound were more frequently tested in syncope patients compared to non-syncope patients. Syncope patients had higher rates of positive telemetry/Holter monitoring, CTAs, and electroencephalograms.

CONCLUSION: Patients who sustain syncopal falls frequently undergo diagnostic testing without a higher yield to determine the etiology of syncope.

Language: en