Involvement of older adults, the golden resources, as a primary measure for fall prevention

Abstract

Falls remain the second leading cause of injury-related deaths worldwide; therefore, longstanding practical fall-prevention efforts are needed. Falls can also lead to a reduction in independence and quality of life among older adults. Fall-prevention research has found that early prevention promotes a prolonged independence. However, it remains unknown which intervention is most beneficial for early prevention and how these interventions should be implemented for long-term effects. In addition, the present and future burden on social and healthcare services contributes to a gap in needs and requires an evidence-based fall prevention. Research suggests that strength, balance, and functional training are effective in reducing falls and fall-related injuries. Such training could greatly impacting independence. Fear of falling and strategies for managing falls are the suggested components to be included when evaluating fall-prevention programs. Thus, the preservation of physical functions is highly relevant for both independence and quality of life. It also contributes to psychological and social well-being, which are important factors for enabling individuals to stay at home for as long as possible. To meet future challenges associated with the expected increase in the older population, older adults should be viewed as a golden resource. With assistance from professionals and researchers, they can learn and gain the ability to institute fall-prevention programs in their own environments. These environments are primarily beyond the responsibilities of the healthcare sector. Therefore, programs comprising current knowledge about fall prevention should be developed, evaluated, and implemented with older adults by using a "train-The-trainer" approach, where a natural collaboration is established between civil society and/or volunteers, healthcare professionals, and researchers. For sustainable and effective fall-prevention programs, a co-design and early collaborative approach should be used in the natural environment, before social and healthcare services are required.

Assessment of spatiotemporal characteristics of gait, trough the Phyphox® app: a case series

Abstract

BACKGROUND: Spatiotemporal characteristics from human locomotion can provide effective clinical metrics to assess motor control and brain function. This case report aims to assess the temporal structure of variability in stride-to-stride time and calculated the intrinsic fractal frame that is hidden below the repetitive structure of physiological gait through the "Phyphox" app. This is an innovative study from the perspective of analyzing gait variables through a mobile app. CASE PRESENTATION: Five older adults Caucasian (3 women; age $= 73 \pm 10,5$ years; body mass $= 62,2 \pm 15,1$ kg; height $= 1,56 \pm 0,1$ m; 2 men; age $= 75,5 \pm 7,8$ years; body mass $= 86,3 \pm 18,0$ kg; height $= 1,77 \pm 0,1$ m) participated in this study. Five participants were asked to walk with a natural cadence, two of the participants presented a value greater than 80 step's/minute (81.14 ± 0.01; 86.67 ± 0.02); and the others had values between 55 and 65 step's/minute (55.20 ± 0.02; 55.78 ± 0.05; 61.02 ± 0.05). Regarding the coefficient of variation, only one participant presented 10.08%. For the total number of steps, three of the participants had values greater than 1000 steps. The variability of these stride-to-stride time has been quantified through detrended fluctuation analysis; one participant presented a value above 1.

CONCLUSIONS: This study provides evidence that a smartphone might provide a valid measure to assess the spatiotemporal characteristics of gait.

Prevalence, complications, and risk factors of falls and fear of falling among older adults; based on Ardakan Cohort Study on Aging (ACSA)

Delbari A, Azimi A, Najafi M, Saatchi M, Bidkhori M, Mousavi ME, Tabatabaei FS, Hooshmand E. Arch. Acad. Emerg. Med. 2024; 12(1): e9.

Abstract

INTRODUCTION: The objective of this study was to assess the prevalence of falls, fear of falling (FOF), complications arising from falls, and identify possible sociodemographic and health-related factors associated with these outcomes among older adults.

METHODS: This cross-sectional study was based on the first wave of the Ardakan Cohort Study on Aging (ACSA), which includes participants over 50 years of age residing in Ardakan, Iran. Fall history, number of fall events, FOF, hospitalizations, and fractures in the past 12 months were assessed through a face-to-face interview. Health-related factors were recorded on a self-expressed basis. Associations were assessed using multiple logistic regression.

RESULTS: Among the 4,990 participants, fall history in the past 12 months was prevalent in 19.9%, with 10.1% reporting more than two fall events. Women ($p < 0.001$) and older participants ($p < 0.001$) had a higher prevalence. In females, 28.8% reported moderate to severe FOF, while 21% experienced disruptions in their daily activities as a result of this fear. The prevalence of fractures following falls was 5.1% in males and 8.6% in females. After adjusting for confounding factors, FOF (OR: 1.59, 95% CI: 1.33-1.91, $p<0.001$), imbalance (OR: 2.45, 95% CI: 1.68-3.58, $p<0.001$), urinary incontinence (OR: 1.44, 95% CI: 1.04-1.9, $p=0.025$), cognitive impairment (OR: 1.21, 95% CI: 1.01-1.46, $p=0.049$), vertigo or dizziness (OR: 1.39, 95% CI: 1.15-1.68, $p<0.001$), osteoporosis (OR: 1.24, 95% CI: 1.03-1.50, $p=0.023$), osteoarthritis (OR: 1.33, 95% CI: 1.13-1.56, $p=0.001$), depression (OR: 1.30, 95% CI: 1.06-1.60, $p=0.010$), and Central Nervous System (CNS)-affecting diseases (OR: 1.99, 95% CI: 1.33-2.97, $p=0.001$) were found to have positive associations with falls.

CONCLUSION: This study showed that about one-fifth of those over 50 in Iran have experienced at least one fall within a year. Self-expressed imbalance, FOF, and urinary incontinence were the most prominent risk factors. Due to resulting in hospitalization and fractures, falls also lead to fear of falling and the associated limitation of activities.

Expanding the Health Belief Model for exploring inpatient fall risk perceptions: a methodology paper

Abstract

AIMS: Inpatient falls among older adults are a relentless problem, and extant inpatient fall prevention research and interventions lack the older adults' perspectives and experiences of their own fall risk in the hospital. Theory-guided research is essential in nursing, and the purpose of this paper was to describe the process of developing a theoretical framework for a phenomenological nursing study exploring older adults' lived experiences of being at risk for falling in the hospital.

METHOD: Based on philosophical nursing underpinnings, the Health Belief Model (HBM) was selected as the theoretical model. The limitations of the model led to expansion of the model with established concepts associated with accidental falls among older adults.

RESULTS: The HBM was selected as the guiding model due to its ability to capture a broad range of perceptions of a health threat. The HBM was expanded with the concepts of embarrassment, independence, fear of falling, dignity and positivity effect. The addition of these concepts made the theoretical framework more applicable to age-related developmental behaviours of older adult and more applicable to nursing research.

CONCLUSION: The Expanded HBM theoretical framework may guide future nursing research to develop fall prevention interventions to decrease fall rates among hospitalized older adults. PATIENT OR PUBLIC CONTRIBUTION: No Patient or Public Contribution.

The risk of fractures after entering long term care facilities

Eshetie TC, Caughey GE, Whitehead C, Crotty M, Corlis M, Visvanathan R, Wesselingh S, Inacio MC. Bone 2023; ePub(ePub): ePub.

Abstract

BACKGROUND: Stratifying residents at increased risk for fractures in long-term care facilities (LTCFs) can potentially improve awareness and facilitate the delivery of targeted interventions to reduce risk. Although several fracture risk assessment tools exist, most are not suitable for individuals entering LTCF. Moreover, existing tools do not examine risk profiles of individuals at key periods in their aged care journey, specifically at entry into LTCFs.

PURPOSE: Our objectives were to identify fracture predictors, develop a fracture risk prognostic model for new LTCF residents and compare its performance to the Fracture Risk Assessment in Long term care (FRAiL) model using the Registry of Senior Australians (ROSA) Historical National Cohort, which contains integrated health and aged care information for individuals receiving long term care services.

METHODS: Individuals aged ≥65 years old who entered 2079 facilities in three Australian states between 01/01/2009 and 31/12/2016 were examined. Fractures (any) within 365 days of LTCF entry were the outcome of interest. Individual, medication, health care, facility and system-related factors were examined as predictors. A fracture prognostic model was developed using elastic nets penalised regression and Fine-Gray models. Model discrimination was examined using area under the receiver operating characteristics curve (AUC) from the 20 % testing dataset. Model performance was compared to an existing risk model (i.e., FRAiL model).

RESULTS: Of the 238,782 individuals studied, 62.3 % (N = 148,838) were women, 49.7 % (N = 118,598) had dementia and the median age was 84 (interquartile range 79-89). Within 365 days of LTCF entry, 7.2 % (N = 17,110) of individuals experienced a fracture. The strongest fracture predictors included: complex health care rating (no vs high care needs, sub-distribution hazard ratio (sHR) = 1.52, 95 % confidence interval (CI) 1.39-1.67), nutrition rating (moderate vs worst, sHR = 1.48, 95%CI 1.38-1.59), prior fractures (sHR ranging from 1.24 to 1.41 depending on fracture site/type), one year history of general practitioner attendances (≥16 attendances vs none, sHR = 1.35, 95%CI 1.18-1.54), use of dopa and dopa derivative antiparkinsonian medications (sHR = 1.28, 95%CI 1.19-1.38), history of osteoporosis (sHR = 1.22, 95%CI 1.16-1.27), dementia (sHR = 1.22, 95%CI 1.17-1.28) and falls (sHR = 1.21, 95%CI 1.17-1.25). The model AUC in the testing cohort was 0.62 (95%CI 0.61-0.63) and performed similar to the FRAiL model (AUC = 0.61, 95%CI 0.60-0.62).

CONCLUSIONS: Critical information captured during transition into LTCF can be effectively leveraged to inform fracture risk profiling. New fracture predictors including complex health care needs, recent emergency

department encounters, general practitioner and consultant physician attendances, were identified.

Factors associated with fear of falling in older women with knee osteoarthritis: a cross-sectional study

Fernandes VO, Moreira BS, de Melo GASC, de Avelar NCP, Costa HS, Bastone AC. Geriatr. Nurs. 2023; 55: 333-338.

Abstract

Knee instability in patients with knee osteoarthritis (KOA) is associated with fear of falling (FoF). This study aimed to investigate the prevalence and the factors associated with FoF in older women with KOA. A cross-sectional study was conducted with 93 older women with KOA. Sociodemographic variables, medical conditions, handgrip strength, and anthropometric and body composition measurements were assessed. The Short Physical Performance Battery was used to measure functional performance. The Western Ontario and McMaster Universities Osteoarthritis Index was applied to assess pain, stiffness, and disability. FoF was assessed by the Falls Efficacy Scale-International. The prevalence of FoF was high (88.2 %). Disability, history of falls, handgrip strength, obesity, number of medications, and pain were independently associated with FoF. Our findings suggest that health professionals should investigate FoF when evaluating older women with KOA and address these risk factors when developing strategies to prevent or minimize FoF in this population.

Predictors of outcomes in geriatric patients with moderate traumatic brain injury after ground level falls

Forssten SP, Ahl Hulme R, Forssten MP, Ribeiro MAFJ, Sarani B, Mohseni S. Front. Med. (Lausanne) 2023; 10: e1290201.

Abstract

INTRODUCTION: The elderly population constitutes one of the fastest-growing demographic groups globally. Within this population, mild to moderate traumatic brain injuries (TBI) resulting from ground level falls (GLFs) are prevalent and pose significant challenges. Between 50 and 80% of TBIs in older individuals are due to GLFs. These incidents result in more severe outcomes and extended recovery periods for the elderly, even when controlling for injury severity. Given the increasing incidence of such injuries it becomes essential to identify the key factors that predict complications and in-hospital mortality. Therefore, the aim of this study was to pinpoint the top predictors of complications and in-hospital mortality in geriatric patients who have experienced a moderate TBI following a GLF.

METHODS: Data were obtained from the American College of Surgeons' Trauma Quality Improvement Program database. A moderate TBI was defined as a head AIS ≤ 3 with a Glasgow Coma Scale (GCS) 9-13, and an AIS ≤ 2 in all other body regions. Potential predictors of complications and in-hospital mortality were included in a logistic regression model and ranked using the permutation importance method.

RESULTS: A total of 7,489 patients with a moderate TBI were included in the final analyses. 6.5% suffered a complication and 6.2% died prior to discharge. The top five predictors of complications were the need for neurosurgical intervention, the Revised Cardiac Risk Index, coagulopathy, the spine abbreviated injury severity scale (AIS), and the injury severity score. The top five predictors of mortality were head AIS, age, GCS on admission, the need for neurosurgical intervention, and chronic obstructive pulmonary disease.

CONCLUSION: When predicting both complications and in-hospital mortality in geriatric patients who have suffered a moderate traumatic brain injury after a ground level fall, the most important factors to consider are the need for neurosurgical intervention, cardiac risk, and measures of injury severity. This may allow for better identification of at-risk patients, and at the same time resulting in a more equitable allocation of resources.

Influencing factors of falls among older adults in Chinese retirement institutions: a systematic review and meta-analysis

Abstract

BACKGROUND: The incidence of falling has always been high among the elderly, and it was easy to cause injuries to the elderly and seriously affect their quality of life. There were many studies have been conducted on risk factors affecting the fall of the elderly, but the results widely, retirement institutions as a gathering place for the elderly, there was currently no comprehensive analysis of the factors related to elderly falls in pension institutions. This study aimed to explore the influencing factors of falls among older adults in Chinese nursing homes.

METHODS: Chinese and English databases were searched for literature published from database inception to 5 April 2023 on the influencing factors of falls among older adults in Chinese nursing homes. Two reviewers independently screened articles, extracted data, and assessed the quality of the included studies. Meta-analysis was performed using RevMan 5.4 software.

RESULTS: Eleven studies involving 3503 participants were included in the meta-analysis. The pooled estimate of falls among older adults in Chinese nursing homes was 32% [95% confidence interval (95%CI) (24.0%, 39.0%)]. The main influencing factors for falls among older adults in Chinese nursing homes were age (Odds Ratio (OR) = 1.53), gender (OR = 5.50), visual impairment (OR = 2.30), sedative-hypnotics (OR = 2.36), fear of falling (OR = 2.95), hypertension (OR = 3.72), static balance (OR = 2.02), three or more chronic diseases (OR = 5.63), cognitive status (OR = 2.64), walking aid use (OR = 1.98), fall-related chronic diseases (OR = 2.48), self-awareness of abilities (OR = 2.43), and frequent reminders for fall prevention (OR = 0.10).

CONCLUSION: Falls among older adults in Chinese nursing homes were common, and there were many influencing factors. Timely screening and intervention should be implemented to reduce the adverse consequences of falls on older adults. TRIAL REGISTRATION: Registration number: CRD42023421099.

Language: en

Yoga therapy on elderly patients with fear of fall: an open-label randomised controlled trial (YOFEAR trial)

Abstract

INTRODUCTION: Fear of fall is experienced by the elderly irrespective of the presence or absence of history of fall. Falls contribute to injuries that culminate in hospitalisation that incur unwarranted medical expenses. Yoga is unique to Indian cultural practices, with a potential to enhance proprioception. It increases self-body awareness, ultimately improving the balancing capacity of older adults. Thus, the objective of this study is to compare the effect of yoga therapy in the study and control groups at 12 weeks from the baseline.

METHODS AND ANALYSIS: This study is designed as an open-label, randomised controlled trial (1:1) with a sample size of 62 elderly patients more than or equal to 60 years of age. Participation of either sex, male or female with a fear of fall will be considered. Two randomised groups of 31 participants each will receive standard therapy for their primary diseases as per the local, national or international guidelines. However, participants in the intervention arm will receive additional structured yoga therapy sessions. The primary objective of this study is to assess and compare the change in fear of fall score of participants in each group using Falls Efficacy Scale (FES) and Berg Balance Scale (BBS) at 12 weeks versus baseline. The secondary endpoint will assess the change in the quality of life of participants at 3 months compared with the baseline.Data will be gathered, entered into Microsoft Excel and further analysed by R software (V.4.3.0). Changes in FES-Intervention and BBS of two groups will be compared either by Student's t-test for parametric data or Mann-Whitney U test for non-parametric data. Statistical significance will be considered if $p<0.05$ at 95% confidence level. ETHICS AND DISSEMINATION: Ethical approval for this study protocol (version 1.0, 22 April 2022) was obtained from the institute ethics committee (AIIMS/IEC/22/195). TRIAL REGISTRATION NUMBER: CTRI/2022/06/043287.

Association of self-efficacy, risk attitudes, and time preferences with functioning in older patients with vertigo, dizziness, and balance disorders in a tertiary care setting-Results from the MobilE-TRA2 cohort

Katzenberger B, Fuchs S, Schwettmann L, Strobl R, Hauser A, Koller D, Grill E. Front. Neurol. 2023; 14: e1316081.

Abstract

INTRODUCTION: The functional burden of vertigo, dizziness, and balance problems (VDB) might depend on the personality traits of the patients affected. The aim of this study thus was to investigate the impact of self-efficacy, risk attitudes, and time preferences on functioning in older patients with VDB before and after treatment in a specialized tertiary care center.

METHODS: Data for this study was obtained from the MobilE-TRA2 cohort study, conducted at a specialized tertiary care center in Germany. Patients aged 60 and older were assessed during their initial stay at the care center and 3 months later, using self-administered questionnaires. Self-efficacy was measured on a scale from 1 (very low) to 5 (very high). Health-related risk attitudes were inquired using an 11-point scale. Time preferences were measured by evaluating patients' willingness to postpone a reward in favor of a greater benefit on an 11-point Likert scale. Functioning was evaluated using the Dizziness Handicap Inventory, representing functional, emotional, and physical aspects of functional disability caused by VDB. Mixed-effects regression models were used to analyze the association between the selected personality traits and functioning over time. Interaction terms with time were incorporated for each personality trait, enabling the assessment of their influence on functioning 3 months following the initial observation period

RESULTS: An overall of 337 patients (53% women, median age at baseline = 70 years) were included. Patients with higher self-efficacy (Beta = -3.82, 95%-CI [-6.56; -1.08]) and higher willingness to take risks (Beta = -1.31, 95%-CI [-2.31; -0.31]) reported better functioning during their initial visit at the care center. Self-efficacy significantly predicted functioning after 3 months for overall functioning (Beta = -4.21, 95%-CI [-6.57; -1.84]) and all three domains.

CONCLUSION: Our findings suggest that patients with high self-efficacy and high willingness to take risks may exhibit better coping mechanisms when faced with the challenges of VDB. Promoting self-efficacy may help patients to better manage the duties accompanying their treatment, leading to improved functioning. These insights may inform the development of personalized treatment aimed at reducing the functional burden of VDB in older patients.

Language: en

Polypharmacy is associated with slow gait speed and recurrent falls in older people with HIV

Kosana P, Wu K, Tassiopoulos K, Letendre S, Ma Q, Paul R, Ellis R, Erlandson KM, Farhadian SF. Clin. Infect. Dis. 2023; ePub(ePub): ePub.

Abstract

BACKGROUND: Older people with HIV (PWH) are prone to using multiple medications due to higher rates of medical comorbidities and the use of antiretroviral therapy (ART). We assessed the prevalence and clinical impact of polypharmacy among PWH.

METHODS: We leveraged clinical data from the AIDS Clinical Trials Group (ACTG) A5322 (HAILO) cohort of PWH aged 40 or older with plasma HIV RNA levels below 200 copies/µL. We assessed the relationship between polypharmacy (defined as the use of 5 or more prescription medications, excluding ART) and hyperpolypharmacy (defined as the use of 10 or more prescription medications) with slow gait speed (less than 1 meter/second) and falls, including recurrent falls.

RESULTS: Excluding ART, 24% of study participants had polypharmacy and 4% had hyperpolypharmacy. Polypharmacy was more common in women (30%) than men (23%). Participants with polypharmacy had a higher risk of slow gait speed (Odds ratio (OR) = 1.78 [95% CI=1.27, 2.50]) and increased risk of recurrent falls (OR= 2.12 [95% CI=1.06, 4.23]). The risk for recurrent falls was further increased in those with hyperpolypharmacy compared to those without polypharmacy (OR = 3.46 [95% CI=1.32, 9.12]).

CONCLUSIONS: In this large, mixed-sex cohort of PWH aged over 40, polypharmacy was associated with slow gait speed and recurrent falls, even after accounting for medical comorbidities, alcohol use, substance use, and other factors. These results highlight the need for increased focus on identifying and managing polypharmacy and hyperpolypharmacy in PWH.

Evolving trends in hip fracture patterns among the elderly from 2001 to 2022

Lakstein D, Oren N, Haimovich Y, Kharchenkov V. Injury 2023; 55(2): e111279.

Abstract

INTRODUCTION: Hip fractures among the elderly exhibit diverse patterns. Differences regarding treatment and prognosis of displaced versus undisplaced intracapsular fractures are well established. Unstable extracapsular fractures are associated with considerably higher rates of complications than stable fractures, including cutout failures, non-unions, wound complications and hardware related problems. The purpose of this study was to identify trends in the distribution of various types of hip fractures and their complexity between 2001 and 2022.

METHODS: This retrospective study compared hip fractures treated in the years 2001, 2006, 2010, 2014, 2018, and 2022, excluding patients under 60 years old and those with pathological or peri-prosthetic fractures. Radiographs were reviewed and fracture patterns were categorized as stable extracapsular, unstable extracapsular, subtrochanteric or intracapsular.

RESULTS: Out of 2646 patients admitted with proximal femoral fractures during these years, 2277 patients (69.5 % women) were available for analysis. Over the initial decade, the mean patient age gradually increased from 80 to 82, subsequently stabilizing. Gender distribution remained consistent, and the proportion of intracapsular fractures showed minimal variation (36-38 %). The most significant finding was the marked decrease in the proportion of stable-to-unstable extracapsular fractures during the first decade from 51 % to 31 %, followed by stabilization after 2010. Subgroup analysis by age revealed that while the proportion change between stable and unstable fractures remained insignificant in younger age groups ($p = 0.41$ for sexagenarians and 0.12 for septuagenarians), a significant change was observed in older patients ($p = 0.002$ for octogenarians and 0.04 for nonagenarians and older patients).

DISCUSSION: This study reveals a surge in unstable peritrochanteric fractures between 2001 and 2010, particularly pronounced in patients over 80. This trend plateaued in the following decade, aligning with the stabilization of the cohort's mean age at 82. Numerous factors, from bone morphology to systemic markers, influence hip fracture types. Evolutions in osteoporosis screening and treatment over the last three decades may have contributed to the observed shifts in fracture pattern distribution.

CONCLUSION: Understanding these trends enriches treatment strategies and underscores the need for further exploration of the interplay between demographic and anatomical factors in the etiology of specific fracture patterns.

Language: en

Feasibility and safety of sequential transcranial direct current stimulation and physical therapy in older adults at risk of falling: a randomized pilot study

Abstract

OBJECTIVE: To establish the feasibility and safety of administering transcranial direct current stimulation (tDCS) immediately prior to physical therapy (PT) sessions in older adults at risk of falls.

DESIGN: A pilot randomized controlled study. SETTING: Outpatient geriatric physical therapy clinic. PARTICIPANTS: Ten older adults living within supportive housing facilities (86.8±7.9 y/o, 8F) were enrolled in the study. INTERVENTIONS: Participants received tDCS or sham stimulation targeting the left dorsal lateral prefrontal cortex for 20 minutes, immediately prior to up to 10 of their PT visits. MAIN OUTCOME MEASURES: Feasibility, safety, and functional outcomes were reported to inform the design of a larger and more definitive trial.

RESULTS: Six fallers (88.8±5.0 y/o, 5F) completed the study and received 82.3% of the possible stimulation sessions, suggesting adding a 20-minute session of stimulation immediately prior to PT training sessions, along with pre- and post-assessments is feasible. The blinding strategy was successful and all reported side effects were expected and transient. While feasible and safe, the trial was met with numerous challenges, including selection bias, time and energy commitment, and large variation in functional performance, that must be considered when designing and implementing larger more definitive trials.

CONCLUSION: This study provides preliminary evidence about the feasibility, safety, and challenges to combine PT and tDCS in very frail older adults.

Sarcopenic obesity burden, determinants, and association with risk of frailty, falls, and functional impairment in older adults with diabetes: a propensity score matching analysis

Maheshwari V, Basu S. Cureus 2023; 15(11): e49601.

Abstract

BACKGROUND: Sarcopenic obesity (SO) is a medical and functional state characterized by the coexistence of excessive adipose tissue and sarcopenia inside an individual. Recent epidemiological studies suggest a rising prevalence of SO in patients with diabetes mellitus (DM) probably due to the conducive environment resulting from adipose tissue dysfunction and muscle wasting accelerated by insulin resistance, chronic inflammation, and altered protein metabolism. Individuals with SO may have higher risk of experiencing falls, frailty, and disabilities due to compromised musculoskeletal integrity, gait abnormalities, and reduced functional capacity. The primary study objective was to determine the prevalence and predictors of SO among older adults with a history of DM. The secondary objective was to assess the association of falls, frailty, and functional disability with SO in patients with DM.

METHODOLOGY: This cross-sectional study analyzed data from the nationally representative Longitudinal Aging Study in India (LASI) Wave 1, focusing on individuals aged 60 and above, with an emphasis on diabetes. SO was assessed using the Asian Working Group for Sarcopenia criteria. Propensity score matching (PSM), logistic regression, and mediation analysis were used to explore relationships between diabetes, SO, and health outcomes (falls, frailty, and disabilities).

RESULTS: Among 31,902 participants aged 60 and above, 14.26% had diabetes, and 17.67% of those with diabetes exhibited SO. Female gender (aOR = 2.63) and urban residence (aOR = 1.40) were significantly associated with higher odds of SO in individuals with diabetes. PSM analysis revealed a 9.0% higher likelihood of SO in older adults with DM than those without DM. SO was further linked to increased risk of falls, frailty, and various levels of activities of daily living (ADL) and instrumental activities of daily living (IADL) disabilities, with significant mediation effects ranging from 3.67% to 45.81%.

CONCLUSIONS: Diabetes substantially increases the risk of SO and associated functional disability with the risk of falls in older adults. Standard diabetes care should integrate health promotion especially nutrition to mitigate the risk of SO-linked functional disability and falls.

Do sensor-based interventions differ from traditional physical therapies in improving older adults' balance?

Abstract

Interventions using sensor technologies have the potential to facilitate balance improvement in clinical practice and, to some extent, are recommended as an alternative to traditional physical therapies. However, whether sensor-based technologies differ from traditional physical therapies in improving older adults' balance remains unclear. Our systematic review identified 25 randomized controlled trials for the meta-analysis. The findings showed that sensor-based interventions performed better than traditional physical therapies in improving balance performance (mean difference = -0.448s, $p < 0.001$). In subgroup analyses by dividing sensors into three categories (i.e., optical, perception, and wearable sensors), interventions using optical sensors were more effective than traditional physical therapies (mean difference = -0.681s, $p < 0.001$); while no significant differences were found for the interventions using perception sensors (mean difference = -0.226 s, $p = 0.106$) and wearable sensors (mean difference = -0.490s, $p < 0.328$) as compared to traditional physical therapies.

Language: en

Effect of 6-week karate (kihon) and basic movement exercise on balance performance in visually impaired individuals

Pekel A, Suveren C, Arslan Y, Yavaşoğlu B, Beykumül A, Ayyıldız Durhan T, Ceylan L.

Abstract

Today, the participation of visually impaired individuals in sports activities is essential. Because the ability to move independently starts to develop with a delay in visually impaired individuals, physical activity is necessary to compensate for developmental delay, eliminate the problem of independent movement in social life by reducing obstacle perception problems, develop self-confidence, and provide regular muscle activation and motivation to move. The study investigated the effect of 6 weeks of karate (kihon) and basic movement training on balance performance in individuals with congenital visual impairment. Fifteen visually impaired individuals aged between 10 and 14 participated in the study, and three groups were formed: experiment 1, experiment 2, and the control group. After the pre-tests were taken, the experimental groups received karate and basic movement training in addition to physical education classes for 6 weeks, while the control group received only physical education classes. When the study results were examined, there were highly significant differences between the pre- and post-test values of the groups receiving karate and basic movement training. At the same time, no progress was observed in the control group. In the post-test comparison of the karate and control groups, positive significance was found in the values of the karate group. In the same way, in the post-test comparison of the basic movement training group and the control group, positive progress was made in the basic movement training group. The post-test comparison of the basic movement training and karate groups was the same. As a result, it was concluded that basic movement training and karate exercises applied for 6 weeks positively affected the balance development in visually impaired individuals aged 10-14 years. No difference was found between the exercise protocols regarding effectiveness, and no improvement was observed in individuals who did not participate in any exercise.

Investigation of population-based fall risk in eye diseases

Abstract

It is well-known that older adults are at higher risk of falls and resulting injuries. Falls and their aftermath are one of the major public health concerns in aging societies. The aging-related risk of falls and fractures can be attributed to factors such as deteriorating muscle strength, balance, and vision.[1,2] One way to further break down the vision factor can be by age-related eye diseases such as cataract, age-related macular degeneration (AMD), and glaucoma. Given their rapidly increasing prevalence, understanding the risk of falls by diagnosis of these eye diseases has clinical and societal importance. However, population-based risk assessment for falls and injuries in adults with these eye diseases has been lacking, as previous studies (cross-sectional or cohort) were either based on relatively small samples or based on self-reports. A recent large-scale population-based cohort study of fall risk by Tsang et al[3] addressed the issue by investigating the medical records of more than 3 million individuals.

Language: en

Relationship between falls and the use of hypnotics, antidepressants, antipsychotics, and anxiolytics in patients with rheumatoid arthritis: a cross-sectional study

Sakurai K, Yanai R, Isozaki T, Yajima N. Mod. Rheumatol. 2023; ePub(ePub): ePub.

Abstract

OBJECTIVEs This cross-sectional study aimed to determine the relationship between falls and use of psychotropic medications in patients with rheumatoid arthritis.

METHODS The psychotropic medication group included patients with rheumatoid arthritis prescribed psychotropic medications (hypnotics/sedatives, antidepressants, antipsychotics, and anxiolytic [benzodiazepines] drugs). Poisson regression with robust variance was performed to investigate the relationship between falls and the use of psychotropic medications, with adjustment for age, sex, rheumatoid arthritis disease activity, stroke, dementia, diabetes mellitus, and osteoarthritis.

RESULTS Of the 307 patients enrolled, 49 (16.0%) used psychotropic medications, and 70 (22.8%) experienced at least one fall per year. Nineteen of the 49 patients (38.8%) taking psychotropic medications and 51 of 258 (19.8%) not taking psychotropic medications experienced at least one fall per year. Falls were significantly more frequent in the group with psychotropic medications than in the group without psychotropic medications (adjusted incidence rate ratio, 1.63; 95% confidence interval; 1.08-2.48, p = 0.02). No relationship was found between the number of falls and the use of psychotropic medications (adjusted incidence rate ratio, 1.16; 95% confidence interval; 0.39-3.44, p = 0.78).

CONCLUSIONS There may be a relationship between psychotropic medication use and falls in patients with rheumatoid arthritis.

Mapping sex and gender differences in falls among older adults: a scoping review

Sebastiani C, Wong JYX, Litt A, Loewen J, Reece K, Conlin N, Dunand T, Montero Odasso M, D'Amore C, Saunders S, Beauchamp M. J. Am. Geriatr. Soc. 2023; ePub(ePub): ePub.

Abstract

BACKGROUND: There is growing recognition of the importance of sex and gender differences within falls literature, but the characterization of such literature is uncertain. The aim of this scoping review was to (1) map the nature and extent of falls literature examining sex or gender differences among older adults, and (2) identify gaps and opportunities for further research and practice.

METHODS: We used a scoping review methodology. Eligible studies included participants with a mean age of $\geq$ 60 years and study aims specifying falls and either sex or gender concepts. MEDLINE, Embase, CINAHL, Ageline, and Psychinfo databases were searched from inception to March 2, 2022. Records were screened and charted by six independent reviewers. Descriptive and narrative reports were generated.

RESULTS: A total of 15,266 records were screened and 74 studies were included. Most studies reported on sex and gender differences in fall risk factors (n = 52, 70%), incidence/prevalence (n = 26, 35%), fall consequences (n = 22, 30%), and fall characteristics (n = 15, 20%). The majority of studies (n = 70, 95%) found significant sex or gender differences in relation to falls, with 39 (53%) identifying significant sex differences and 31 (42%) identifying significant gender differences. However, only three (4%) studies defined sex or gender concepts and only nine (12%) studies used sex or gender terms appropriately. Fifty-six (76%) studies had more female participants than males. Four (5%) were intervention studies. Studies did not report falls in line with guidelines nor use common fall definitions.

CONCLUSION: Sex and gender differences are commonly reported in falls literature. It is critical for future research to use sex and gender terms appropriately and include similar sample sizes across all genders and sexes. In addition, there is a need to examine more gender-diverse populations and to develop interventions to prevent falls that address sex and gender differences among older adults.

Risk of falls and fractures in individuals with cataract, age-related macular degeneration, or glaucoma

Tsang JY, Wright A, Carr MJ, Dickinson C, Harper RA, Kontopantelis E, van Staa T, Munford L, Blakeman T, Ashcroft DM. JAMA Ophthalmol. 2023; ePub(ePub): ePub.

Abstract

IMPORTANCE: Three leading disease causes of age-related visual loss are cataract, age-related macular degeneration (AMD), and glaucoma. Although all 3 eye diseases have been implicated with falls and fracture risk, evidence is mixed, with the contribution of different eye diseases being uncertain.

OBJECTIVE: To examine whether people with cataract, AMD, or glaucoma have higher risks of falls or fractures than those without.

DESIGN, SETTING, AND PARTICIPANTS: This cohort study was a population-based study in England using routinely collected electronic health records from the Clinical Practice Research Datalink (CPRD) GOLD and Aurum primary care databases with linked hospitalization and mortality records from 2007 to 2020. Participants were people with cataract, AMD, or glaucoma matched to comparators (1:5) by age, sex, and general practice. Data were analyzed from May 2021 to June 2023. EXPOSURES: For each eye disease, we estimated the risk of falls or fractures using separate multivariable Cox proportional hazards regression models. MAIN OUTCOMES: Two primary outcomes were incident falls and incident fractures derived from general practice, hospital, and mortality records. Secondary outcomes were incident fractures of specific body sites.

RESULTS: A total of 410 476 people with cataract, 75 622 with AMD, and 90 177 with glaucoma were matched (1:5) to 2 034 194 (no cataract), 375 548 (no AMD), and 448 179 (no glaucoma) comparators. The mean (SD) age was 73.8 (11.0) years, 79.4 (9.4) years, and 69.8 (13.1) years for participants with cataract, AMD, or glaucoma, respectively. Compared with comparators, there was an increased risk of falls in those with cataract (adjusted hazard ratio [HR], 1.36; 95% CI, 1.35-1.38), AMD (HR, 1.25; 95% CI, 1.23-1.27), and glaucoma (HR, 1.38; 95% CI, 1.35-1.41). Likewise for fractures, there were increased risks in all eye diseases, with an HR of 1.28 (95% CI, 1.27-1.30) in the cataract cohort, an HR of 1.18 (95% CI, 1.15-1.21) for AMD, and an HR of 1.31 (95% CI, 1.27-1.35) for glaucoma. Site-specific fracture analyses revealed increases in almost all body sites (including hip, spine, forearm, skull or facial bones, pelvis, ribs or sternum, and lower leg fractures) compared with matched comparators.

CONCLUSIONS AND RELEVANCE: The results of this study support recognition that people with 1 or more of these eye diseases are at increased risk of both falls and fractures. They may benefit from improved advice, access, and referrals to falls prevention services.

Language: en

Fear of falling and associated factors in older adults with heart failure

Unes M, Tasar PT, Karasahin O, Birdal O, Sevinc C, Sahin S. Psychogeriatr. 2023; ePub(ePub): ePub.

Abstract

BACKGROUND: This study aimed to evaluate the prevalence of fear of falling and associated factors in older adults with heart failure.

METHODS: A prospective, cross-sectional study. The study included 100 geriatric patients who were hospitalised and treated in the cardiology department of our hospital with ventricular ejection fraction (LVEF) lower than 50% for at least 1 year. A series of geriatric assessments were performed by face-to-face interview on the day of admission. Electrocardiography (ECG) and transthoracic echocardiography (TTE) were also performed on the day of admission.

RESULTS: The median age of the patients was 72 years, and 72.0% were men. Falls Efficacy Scale scores indicated a fear of falling in 46 (46.0%) of the patients. Charlson Comorbidity Index (CCI) was significantly higher in patients with fear of falling ($P < 0.001$). Severe depression, severe clinical insomnia, daytime sleepiness, and malnutrition were significantly more frequent among patients with fear of falling. Fear of falling was associated with significantly lower LVEF ($P = 0.001$). The presence of severe depression increased the risk of fear of falling by 13.97 times (95% CI: 3.064-63.707; $P = 0.001$), and the presence of daytime sleepiness increased the risk by 3.49 times (95% CI: 1.012-12.037; $P = 0.048$). A one-unit increase in CCI increased the risk of fear of falling by 1.56 times (95% CI: 1.093-2.238; $P = 0.014$).

CONCLUSIONS: Heart failure patients with concomitant depression, sleep disorders, and high comorbidities have greater fear of falling.

The nomogram model and factors for the postoperative mortality of elderly patients with femoral neck fracture undergoing artificial hip arthroplasty: a single-institution 6-year experience

Wang Z, Zhang L, Zeng X, Nie P, Wang M, Xiong Y, Xu Y. Orthop. Surg. 2023; ePub(ePub): ePub.

Abstract

OBJECTIVE: Artificial hip arthroplasty (AHA) is widely accepted in elderly patients with femoral neck fractures, but it is associated with high risk of death and various postoperative complications due to old age and accompanying chronic diseases. Therefore, this study aimed to explore the risk factors for death in elderly patients with femoral neck fractures after AHA and to establish a nomogram risk prediction model, which is expected to reveal high-risk patients and improve the postoperative quality of life and survival rate of patients.

METHODS: Elderly patients who underwent AHA for femoral neck fractures in our hospital from September 2014 to May 2021were retrospectively analyzed. These patients were divided into a survival group and a death group according to their clinical outcomes. The following clinical data were recorded for the patients in the two groups: sex, age, underlying diseases, smoking and drinking history, preoperative nutritional risk score (NRS) and American Society of Anesthesiologists (ASA) score, as well as relevant indicators about the operation. These data were subject to univariate analysis and then logistic analysis to determine the risk factors of death. Subsequently, a nomogram risk prediction model was established and further validated with the receiver operating characteristic curve (ROC) and the Hosmer-Lemeshow test. Finally, the effects of predictive risk factors were analyzed using the Kaplan-Meier survival curve.

RESULTS: Follow-up was completed by 260 patients, including 206 patients in the survival group and 54 patients in the death group; the overall death rate was 20.77%, and the follow-up time, age, postoperative 1, 3 and 5-year death rates were 3.47 ± 1.93 years, 75.32 ± 9.12 years, 5.77%, 12.51%, and 25.61%, respectively. The top three causes of death in 54 patients were respiratory disease, cerebrocardiovascular disease, and digestive disease, respectively. The logistic analysis indicated that elderly patients with femoral neck fractures, the risk factors for death after AHA were age ≥ 80 years, preoperative NRS ≥ 4, HB ≤ 90 g/L, CR ≥ 110 umol/L, and ASA score ≥ 3, as well as postoperative albumin ≤ 35 g/L, the nomogram was established, and then its predictive performance was successfully validated using the ROC curve (AUC $= 0.814$, 95% confidence interval $= 0.749$-0.879) and the Hosmer-Lemeshow test (p $= 0.840$). Furthermore, Kaplan-Meier survival curve analysis revealed that the abovementioned six indicators were correlated with the post-AHA survival time of elderly patients with femoral neck fractures (p(Log Rank) < 0.05).

CONCLUSION: Old age, preoperatively high NRS and ASA score, anemia, poor renal function, and postoperative hypoproteinemia are the major risk factors for death in elderly patients with femoral neck fractures after

AHA; they are also associated with postoperative survival. Early identification and effective interventions for optimization of modifiable risk factors are recommended to improve the postoperative quality of life and survival rates.

Nutritional strategies to optimise musculoskeletal health for fall and fracture prevention: looking beyond calcium, vitamin D and protein

Abstract

Falls and osteoporotic fractures are a major public health problem, particularly among older adults. A third of individuals aged 65 years and over fall at least once each year, with up to 20 % of these resulting in serious injury, including fracture. In conjunction with regular exercise, the importance of diet for musculoskeletal health has largely focused upon calcium, vitamin D, and protein, particularly in the context of preventing falls and fractures. Whilst there is evidence for the benefits of these nutrients for musculoskeletal health, other aspects of the diet remain largely underexplored. For example, vegetables are rich sources of macro- and micronutrients that are essential for muscle function and bone health, which are key factors in the prevention of falls and fractures. Recent work has highlighted the importance of nutrients such as vegetable-derived nitrate and vitamin K1 in optimising muscle strength, physical function, and bone quality. In the context of dietary patterns, vegan/plant-based diets have recently gained popularity due to perceived health benefits, animal welfare, or to tackle climate change. The elimination and/or substitution of animal-based products for plant foods (without careful planning and/or expert dietary guidance) could, however, have long-term negative musculoskeletal consequences; a trend uncovered by recent evidence. Within the overarching theme of nutrition for fall and fracture prevention in older populations, the aim of this review is to (i) summarise the current evidence for calcium, vitamin D and protein; (ii) describe the importance of vegetables and selected nutrients, such as nitrate and vitamin K1, for muscle function and bone structural integrity; and (iii) highlight current evidence around different dietary patterns (e.g., plant-based, diet quality, data driven approaches) and their impact on musculoskeletal health.

Reply to the letter to the editor "Frailty is a risk factor for falls in the older adults: a systematic review and meta-analysis"

Abstract

[The publisher has not provided an abstract for this article.]

Letter to the editor: Comment on "Frailty is a risk factor for falls in the older adults: a systematic review and meta-analysis"

Abstract

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