Safety Literature 25ᵗʰ September 2022

A qualitative exploration of proactive falls prevention by Canadian primary care providers

Abstract

BACKGROUND: Falls are a growing concern in Canada. Primary care providers are well positioned to address falls risk, but international literature suggests that best-practice guidelines are rarely followed. The objective of this study is to explore the perspectives of Canadian primary care providers around falls prevention and identify solutions.

METHODS: We conducted one-on-one qualitative interviews with a maximum variation sample of nine primary care providers in Ontario (n=8) and Alberta (n=1) in Canada. Data were collected over telephone and in-person at the location of participants choosing. Audio recordings of the interviews were transcribed, then coded and analyzed with the Behaviour Change Wheel theoretical framework.

RESULTS: Most participants reported relying on patient self-report, intuition, and reactive approaches to identifying falls risk. Reported barriers to falls prevention included low capability to gather information on patient history, context, and community resources; limited opportunity to manage patient complexity due to time constraints; and challenges with motivating patients to engage in care plans. Reported facilitators included team-based interprofessional care and provider motivation.

CONCLUSIONS: This study has found that Canadian primary care providers face barriers to identifying and managing falls risk. These barriers may be rooted in primary care culture, structure, and tradition.

Language: en

Keywords

Association between low serum phosphate level and risk of falls in hospitalized patients over 50 years of age: a retrospective observational cohort study

Abstract

PURPOSE: Falls are the leading cause of injury among hospitalized patients, particularly among older patients. We investigated the association between serum phosphate (s-phosphate) levels and the risk of in-hospital falls.

PATIENTS AND METHODS: This retrospective observational cohort study included all patients aged over 50 years who were admitted to Yongin Severance Hospital in South Korea between January 2018 and March 2021. Demographic, anthropometric, and biochemical parameters were recorded on admission. S-phosphate levels were classified into three groups: below normal (<2.8 mg/dL), normal (2.8-4.4 mg/dL), and above normal (≥4.5 mg/dL). The normal group was further stratified into tertiles (2.8-3.2, 3.3-3.7, and 3.8-4.4 mg/dL). The incidence of in-hospital falls was compared between the five groups. Logistic regression analyses were performed to assess the association between s-phosphate levels and the incidence of falls during the hospital stay, with clinical factors included as covariates in the multivariable models.

RESULTS: A total of 15,485 patients (female: 52.1%) with a median age of 70.0 years (interquartile range: 60.0-79.0 years) were included in the analysis, of whom 295 (1.9%) experienced a fall during the hospital stay. The incidence of falls was significantly higher among patients with lower s-phosphate levels, and this relationship also applied among patients with s-phosphate levels within the normal range as well. The association between lower s-phosphate levels and increased risk of falls remained significant in the adjusted analyses.

CONCLUSION: A lower s-phosphate level on admission was independently associated with an increased risk of in-hospital falls. Further studies are needed to determine whether the s-phosphate level on admission could improve prediction of the risk of in-hospital falls.

Language: en

Changes in physical functioning and fall-related factors in older adults due to COVID-19 social isolation

de Albuquerque Angelo FD, de Souza Fonseca F, Farah BQ, de Araújo RC, Cavalcante BR, Beltrão NB, Pirauá ALT. Can. Geriatr. J. 2022; 25(3): 240-247.

Abstract

BACKGROUND: Social isolation has been one of the main measures for the prevention of COVID-19. It's possible that, in addition to the natural aging-related deficits, social isolation has accelerated the decline of the different components of physical and mental capacity in older adults. This study aimed to compare the functional capacity and concern about falling in older adults before and during COVID-19 social isolation.

METHOD: This observational longitudinal study was carried out with 45 community dwelling older adults (mean age 65.6 ± 4.6 years, 88.8% women). Functional capacity and concerns about falling assessments were carried out before the COVID-19 pandemic, and between the 16th and 18th week of social isolation. All testes were face-to-face, except the second FES-I assessment, which took place via telephone call in order to minimize a prolonged person-to-person contact. Muscle strength, muscle power, functional mobility, functional muscle fitness, upper and lower body flexibility, dynamic balance, and Efficacy Scale were assessments.

RESULTS: Regarding functional capacity, there was 14% decline in muscle strength (p<.001), 7% in power (p=.001), 11% in functional mobility (p=.001), 20% in functional muscle fitness (p=.001), and 60% in upper body flexibility (p=.001) and 33% lower body flexibility (p=.003). The dynamic balance and the concern about falling showed no statistically significant differences.

CONCLUSION: Thus, it can be concluded that there was a decline in older adults' functional capacity during COVID-19 social isolation.

Language: en

Keywords

Estimating balance, cognitive function, and falls risk using wearable sensors and the sit-to-stand test

Abstract

The five times sit-to-stand test (FTSS) is an established functional test, used clinically as a measure of lower-limb strength, endurance and falls risk. We report a novel method to estimate and classify cognitive function, balance impairment and falls risk using the FTSS and body-worn inertial sensors. 168 community dwelling older adults received a Comprehensive Geriatric Assessment which included the Mini-Mental State Examination (MMSE) and the Berg Balance Scale (BBS). Each participant performed an FTSS, with inertial sensors on the thigh and torso, either at home or in the clinical environment. Adaptive peak detection was used to identify phases of each FTSS from torso or thigh-mounted inertial sensors. Features were then extracted from each sensor to quantify the timing, postural sway and variability of each FTSS. The relationship between each feature and MMSE and BBS was examined using Spearman's correlation. Intraclass correlation coefficients were used to examine the intra-session reliability of each feature. A Poisson regression model with an elastic net model selection procedure was used to estimate MMSE and BBS scores, while logistic regression and sequential forward feature selection was used to classify participants according to falls risk, cognitive decline and balance impairment. BBS and MMSE were estimated using cross-validation with low root mean squared errors of 2.91 and 1.50, respectively, while the cross-validated classification accuracies for balance impairment, cognitive decline, and falls risk were 81.96, 72.71, and 68.74%, respectively. The novel methods reported provide surrogate measures which may have utility in remote assessment of physical and cognitive function.

Language: en

Keywords

balance; Berg balance scale; cognitive decline; falls; inertial sensor; sit-to-stand test

Exercise for preventing falls in post-stroke patients: a network meta-analysis

Abstract

Falls are a great concern for poststroke patients. Various interventions have been developed over the past few decades to prevent falls. However, the effectiveness of these interventions remains to be investigated. These authors aimed to evaluate the effects of exercise interventions on the prevention of poststroke falls. CNKI, Wan Fang, VIP, SinoMed, PubMed, Embase, Cochrane Library, and CINAHL were searched for randomized controlled trials (RCTs) on the prevention of falls after stroke from inception to September 2021. The primary result was the number of falls. Two reviewers independently screened and extracted data and assessed the risk of bias for all studies. In Stata 15.1, the effects of multiple interventions were compared using Bayesian networks. A total of 15 RCTs with 8 kinds of exercise interventions were included. Balance training (BT) was the most effective way to prevent falls (odds ratio [OR] = 0.24, 95% confidence interval [CI] = 0.13-0.46, $p < 0.05$). Moreover, cognition and movement multitask training (CMM) (OR = 0.30, 95% CI = 0.09-0.96, $p < 0.05$); Multimodal Exercise (OR = 0.31, 95% CI = 0.11-0.84, $p < 0.05$) and Resistance Exercise (OR = 0.35, 95% CI = 0.15-0.84, $p < 0.05$) were ranked as second, third and fourth most effective, respectively. The effect of Walking-based Intervention was the worst (OR = 1.63, 95% CI = 0.57-4.67, $p > 0.05$). BT and CMM are the preferred exercise interventions for the prevention of poststroke falls. A further investigation is needed to compare the effectiveness between BT and CMM for populations at high risk of falling after stroke.

Language: en

Keywords

Falls in community-dwelling women with bipolar disorder: a case-control study

Stuart AL, Pasco JA, Berk M, Quirk SE, Koivumaa-Honkanen H, Honkanen R, Mohebbi M, Williams LJ. BMC Psychiatry 2022; 22(1): e620.

Abstract

BACKGROUND: Falls are a common occurrence in psychiatric hospital settings, however population-based research among individuals with psychiatric disorders, in particular bipolar disorder (BD) is scant. Thus, we aimed to investigate falls risk in community-dwelling women diagnosed with BD.

METHODS: Women with BD (cases, n = 119) were recruited from health care settings located in southeast Victoria, Australia. Age-matched controls (n = 357, ratio 3:1) without BD were participants in the Geelong Osteoporosis Study drawn from the same geographical region. Lifetime history of BD was identified by semi-structured clinical interview (SCID-IV/NP). Previous 12-month falls data were obtained via questionnaire. Information on mobility, alcohol use, general health, medication use, blood pressure, body mass index, socioeconomic status and use of a walking aid was collected. Generalised Estimating Equations, binary and ordinal logistic regression were used to determine the odds ratio (OR) and 95% confidence interval (CI) for falls following adjustment for confounders.

RESULTS: During the 12-month period, 34 (28.6%, median age 48.4 yr) cases and 70 (19.6%, median age 49.1 yr) controls reported one fall; 22 (18.5%) cases and 18 (5.0%) controls reported ≥ two falls (p < 0.001). Cases had 2.5-fold increased odds of at least one fall and 2.9-fold increased likelihood of increasing falls categories (0 vs. 1 vs. 2 +), compared to controls [adjOR 2.5, 95%CI (1.8, 3.4), adjOR OR 2.9, 95%CI (2.0, 4.1)].

CONCLUSION: Risk of falls was greater among women with BD. Balance training could be a research and clinical focus for falls prevention programs among women with bipolar disorder to prevent the detrimental outcomes associated with falling.

Language: en

Keywords

Longitudinal associations between falls and risk of gait decline: results from the Central Control of Mobility and Aging Study

Jayakody O, Blumen HM, Ayers E, Verghese J. Arch. Phys. Med. Rehabil. 2022; ePub(ePub): ePub.

Abstract

OBJECTIVE: To examine whether falls are associated with longitudinal changes in different gait domains and onset of clinical gait abnormalities.

DESIGN: A longitudinal study SETTING: : General community PARTICIPANTS: : Ambulatory older adults free of dementia (n=428, M age 77.8±6.4 years) INTERVENTIONS: : Not applicable MAIN OUTCOME MEASURES: : Gait was assessed with a computerized walkway. Pace, rhythm and variability (outcome measures) were derived from individual gait measures, using principal component analysis. Clinical gait abnormalities (neurological, non-neurological, mixed) were visually assessed by clinicians. Linear mixed effects models were used to examine the associations between falls (the exposure variable coded as none, singe and multiple) and changes in gait domains. Multinomial logistic regression was used to examine associations between falls and the onset of clinical gait abnormalities. Models were adjusted for sex, education, age, body mass index, number of comorbidities, gait speed at the first follow-up and time between the last fall and the first follow-up gait assessment.

RESULTS: Pace declined while rhythm and variability increased at a faster rate (p<0.05), among 32 participants with multiple falls in the first year of follow-up compared to 299 participants with no falls. Risk for clinical gait abnormalities between those with no falls, single or multiple falls was not different.

CONCLUSIONS: Multiple falls predict future gait decline in multiple domains in aging. Interventions to prevent gait decline following multiple falls should be investigated.

Language: en

Keywords

Prevalence of falls, incontinence, malnutrition, pain, pressure injury and restraints in home care: a narrative review

Lampersberger LM, Bauer S, Osmancevic S. Health Soc. Care Community 2022; ePub(ePub): ePub.

Abstract

Global demographic changes and the strategy of 'ageing in place' will increase the importance of home care in the future. To deliver safe and high-quality care, clinical data on nursing-sensitive indicators and transparency are needed. A comprehensive narrative review of the literature was conducted to describe the prevalence and incidence of nursing-sensitive indicators, namely, falls, incontinence, malnutrition, pain, pressure injury and restraints in home care. A literature search was carried out in May 2021 in PubMed and CINAHL, and 28 studies were included. Data were extracted using two extraction tables designed for this review. Prevalence and incidence rates varied widely and internationally within each indicator. The prevalence range for falls was 4.8%-48%; urinary incontinence, 33.7%-62.5%; malnutrition, 20%-57.6%; pain, 6.5%-68.5%; pressure injury, 16%-17.4% and physical restraints, 5%-24.7%. Due to various measurements and different instruments, the rates are not comparable. The use of standardised measurement and risk assessment tools to assess nursing-sensitive indicators in home care is needed to implement suitable interventions and to prevent these indicators.

Language: en

Real-world association of self-reported sleep duration and quality with falls among older adults: a representative nationwide study of China

Zhu W, Lin H, Zhang J, Sheng M, Kathleen Y, Zheng P, Jiang S. Sleep Med. 2022; 100: 212-218.

Abstract

INTRODUCTION: Falls are the leading cause of injury-related morbidity and mortality among older adults (aged ≥65 years) worldwide. However, previous studies examining sleep and falls were confined to community subpopulations, and few studies included both sleep quality and sleep duration when discussing risk factors of falls. This nationwide representative study aimed to examine the links between sleep duration, sleep quality and falls among Chinese community-dwelling older adults.

METHOD: Cross-sectional analyses were conducted with 14,681 older individuals (aged ≥65 years) from 23 Chinese provinces from the Chinese Longitudinal Healthy and Longevity Study (CLHLS) in 2018. Individual variables, including sociodemographic factors, lifestyle, and behavioral factors, were measured using a self-reported questionnaire. Falls were confirmed through face-to-face interviews. Three multivariate logistic regression models were conducted to assess the association between sleep duration and sleep quality with falls.

RESULTS: There were 21.7% (95%CI: 21.0-22.4%) participants who had experienced falls in the past year. After controlling demographic and individual variables, falls in older adults were associated with self-reported sleep quality and self-reported sleep duration. Those who reported poor sleep quality were more likely to fall (OR = 1.149; 95%CI = 1.004,1.316). Participants who reported sleep duration that was too short (<5) (OR = 1.349; 95% CI = 1.191 to 1.528) or too long (>8) (OR = 1.267; 95% CI = 1.151 to 1.394) were both associated with higher fall prevalence.

CONCLUSION: Nearly one-fifth of older adults in this study had experienced falls in the past year. The study found that falls were significantly associated with less sleep duration, longer sleep duration, and overall poor sleep quality among the old Chinese population.

Language: en

Keywords

Falls; China; Sleep duration; Older adults; Sleep quality

Recruitment strategies and reach of a digital fall-prevention intervention for community-dwelling older adults

Pettersson B, Bajraktari S, Skelton DA, Zingmark M, Rosendahl E, Lundin-Olsson L, Sandlund M. Digit. Health 2022; 8: e20552076221126050.

Abstract

BACKGROUND: To have an impact on the population's health, preventive interventions have to reach a large proportion of the intended population. Digital solutions show potential for providing wider access to fall preventive exercise. However, there is a lack of knowledge about how to reach the target group. The aim of this study was to describe the recruitment process used in the Safe Step randomised controlled trial and the characteristics of the participants reached.

METHODS: Several recruitment methods, both digital and non-digital, were adopted to reach the intended sample size. Sociodemographic parameters from the baseline questionnaire were used to describe participant characteristics. The characteristics were also compared to a representative sample of older adults in the Swedish population.

RESULTS: In total, 1628 older adults were recruited. Social media proved to be the most successful recruitment strategy, through which 76% of the participants were recruited. The participants reached had a mean age of 75.9 years, lived in both urban and rural locations, were already frequent users of the Internet and applications (smartphone/tablet) (79.9%), had higher education (71.9%), and a large proportion were women (79.4%). In comparison with the general population participants in the Safe Step study were more highly educated (p < 0.001), women in the study more frequently lived alone (p < 0.001) and men more often reported poorer self-rated health (p = 0.04). Within the study, men reported a faster deteriorating balance (p = 0.003) and more prescribed medication (p < 0.001) than women.

CONCLUSION: Recruitment via social media is a useful strategy for reaching older adults, especially women and frequent users of the Internet, for a fully self-managed and digital fall prevention exercise intervention. This study underlines that a range of interventions must be available to attract and suit older adults with different functional statuses and digital skills.

Language: en

Keywords

Self-reported symptom causes of mobility difficulty contributing to fear of falling in older adults

McKay MA, Mensinger JL, O'Connor M, Utz M, Costello A, Leveille S. Aging Clin. Exp. Res. 2022; ePub(ePub): ePub.

Abstract

BACKGROUND: Self-reported symptom causes of mobility difficulty that contribute to fear of falling (FOF) in older adults has not been fully explored as an area for intervention. AIMS: Identify the prevalence of self-reported symptoms causing mobility difficulties and to examine the difference in FOF by symptom category.

METHODS: Conduct a secondary data analysis of a population-based cohort of community-dwelling older adults, $\geq$ 70 years, enrolled in the MOBILIZE Boston study. The analysis included 242 older adults reported difficulty walking ¼ mile (0.4 km) and/or climbing one flight of stairs. Participants identified the main symptom cause of the mobility difficulty from a list of 32 symptoms, grouped into five categories. FOF was measured using the Tinetti Falls Efficacy Scale.

RESULTS: Pain was the primary symptom causing mobility difficulty (38%), followed by endurance (21%), weakness (13%), balance (9%), and other (3%). Although a greater proportion of participants who identified balance as the primary symptom category had significantly higher FOF compared to others, there was a greater number overall who reported pain as their main symptom who also had FOF. Therefore, pain contributed to a higher relative burden of FOF in the population than did balance symptoms.

DISCUSSION: Various symptoms affect mobility and are associated with FOF, a known fall risk factor. Many older adults identify pain as the main cause of their mobility difficulty and report FOF.

CONCLUSIONS: Improving pain symptoms for older adults may improve mobility and reduce fear of falling, potentially averting further decline in mobility and independence.

Language: en

Keywords

The usability of a smartphone-based fall risk assessment app for adult wheelchair users: observational study

Abstract

BACKGROUND: Individuals who use wheelchairs and scooters rarely undergo fall risk screening. Mobile health technology is a possible avenue to provide fall risk assessment. The promise of this approach is dependent upon its usability.

OBJECTIVE: We aimed to determine the usability of a fall risk mobile health app and identify key technology development insights for aging adults who use wheeled devices.

METHODS: Two rounds (with 5 participants in each round) of usability testing utilizing an iterative design-evaluation process were performed. Participants completed use of the custom-designed fall risk app, Steady-Wheels. To quantify fall risk, the app led participants through 12 demographic questions and 3 progressively more challenging seated balance tasks. Once completed, participants shared insights on the app's usability through semistructured interviews and completion of the Systematic Usability Scale. Testing sessions were recorded and transcribed. Codes were identified within the transcriptions to create themes. Average Systematic Usability Scale scores were calculated for each round.

RESULTS: The first round of testing yielded 2 main themes: ease of use and flexibility of design. Systematic Usability Scale scores ranged from 72.5 to 97.5 with a mean score of 84.5 (SD 11.4). After modifications were made, the second round of testing yielded 2 new themes: app layout and clarity of instruction. Systematic Usability Scale scores improved in the second iteration and ranged from 87.5 to 97.5 with a mean score of 91.9 (SD 4.3).

CONCLUSIONS: The mobile health app, Steady-Wheels, has excellent usability and the potential to provide adult wheeled device users with an easy-to-use, remote fall risk assessment tool. Characteristics that promoted usability were guided navigation, large text and radio buttons, clear and brief instructions accompanied by representative illustrations, and simple error recovery. Intuitive fall risk reporting was achieved through the presentation of a single number located on a color-coordinated continuum that delineated low, medium, and high risk.

Language: en

Z-drugs and falls in nursing home patients: data from the INCUR study

Damanti S, Tresoldi M, de Souto Barreto P, Rolland Y, Cesari M. Aging Clin. Exp. Res. 2022; ePub(ePub): ePub.

Abstract

BACKGROUND: Z-drugs are the most prescribed treatment for insomnia, but their negative effect on the body sway can increase the risk of falls. AIMS: Evaluating the association between Z-drugs and falls in a resident cohort.

METHODS: Prospective observational study using the data collected in the Incidence of pNeumonia and related ConseqUences in nursing home Residents (INCUR) study.

RESULTS: During the one-year follow-up, among the 800 participants (median age 87), 93 individuals fell (64 fracturing and 29 without fracturing). Lower calf circumference (adjusted OR 0.92, 95% CI 0.86-0.97, p = 0.006) and the use of selective serotonin reuptake inhibitors (adjusted OR 1.86, 95% CI 1.1-3.05, p = 0.01) predicted falls, whereas the use of Z-drugs (adjusted OR 2.37, 95% CI 1.13-4.94, p = 0.02) and lower body mass index (adjusted OR 0.9, 95% CI 0.84-0.97, p = 0.005) were associated with falls without fractures.

CONCLUSIONS: Z-drugs predicted falls without fractures in residents. Alternative strategies to promote sleep in residents should be pursued.

Language: en

Adaptation of an evidence-based, fall-prevention, Tai Ji Quan exercise program for adults with traumatic brain injury: focus group results

Jones DL, Acord-Vira A, Robinson MB, Talkington M, Morales AL, Pride CD, Monnin J, Rice TA. Physiother. Theory Pract. 2022; ePub(ePub): ePub.

Abstract

INTRODUCTION: Fall risk is increased in people with traumatic brain injury (TBI).

PURPOSE: This study adapted an evidence-based fall-prevention program Tai Ji Quan: Moving for Better Balance (TJQMBB) for adults with TBI and convened an online focus group with the target population for input on its delivery, content/safety, and potential benefits.

METHODS: Fall prevention and TBI experts adapted TJQMBB. Eight adults with TBI were recruited. Participants watched demonstrations of the adapted TJQMBB exercises online over ZOOM©. Themes, subthemes, and participant quotes were extracted.

RESULTS: Five women (71%) and 2 men (29%) participated with a mean age of 45 years. Nine themes and 5 subthemes were identified. Participants recommended a learning sequence of exercise demonstration with verbal directions and visual cues, followed by simple written instructions. Participants identified physical and cognitive barriers to participation and recognized that possible balance loss during exercise was a safety issue. Potential benefits included improved balance, navigation of challenging terrain, quality of life, and social inclusion.

CONCLUSION: Participants viewed the adapted program as safe and appropriate, given modifications for physical (e.g. balance) and cognitive impairments. The TJQMBB program may be underutilized in this population due to the complexity of the exercises, but is possible with modifications.

Language: en

Keywords