

Safety Literature 20th September 2020

A cross sectional study on the prevalence and risk factors of fall among the elderly in an urban slum in Chennai

Kumar RS, Ravindran K. Int. J. Community Med. Public Health (Gujarat) 2019; 6(3): 1102-1107.

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Abstract

BACKGROUND: Falls are an important cause of morbidity and mortality in elderly people. Falls lead to multiple medical and psychological problems in the elderly. Aim was to study the prevalence of falls among the elderly and to find the associated risk factors for falls among the elderly living in an urban slum in Chennai.

Methods: A cross sectional study was conducted among elderly population over 60 years and above, in an urban slum area. About 150 elderly were selected using simple random sampling method, using the voters list as the sampling frame. A pretested questionnaire was administered to collect information about falls. In statistical analysis univariate and multivariate logistic regression was employed using SPSS version 22.

Results: Of the 150 elderly persons studied, prevalence of falls rate is 35.3% (95% CI 28.13 to 43.26). Of them 64.1% had one episode of fall and 35.8% had recurrent falls. The prevalence of fall among persons with comorbidities like hypertension or diabetes was 39.3% and 36.1% respectively. The rate of fall among those using a walking stick was 58.3%, having tremors was 15% and having abnormal gait was 40%. The risk factors found to be significantly associated in univariate analysis were gender and presence of tremors ($p < 0.05$). In multivariate analysis none of the factors showed statistical significance.

Conclusions: Falls are very common among elderly. It is utmost important to prevent the falls by making necessary environmental modifications and following healthy lifestyle.

Language: en

Effects of mind-body interventions involving meditative movements on quality of life, depressive symptoms, fear of falling and sleep quality in older adults: a systematic review with meta-analysis

Weber M, Schnorr T, Morat M, Morat T, Donath L. *Int. J. Environ. Res. Public Health* 2020; 17(18): e6556.

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Abstract

BACKGROUND: The aim of the present systematic meta-analytical review was to quantify the effects of different mind-body interventions (MBI) involving meditative movements on relevant psychological health outcomes (i.e., quality of life (QoL), depressive symptoms, fear of falling (FoF) and sleep quality) in older adults without mental disorders.

METHODS: A structured literature search was conducted in five databases (Ovid, PsycINFO, PubMed, SPORTDiscus, Web of Science). Inclusion criteria were: (i) the study was a (cluster) randomized controlled trial, (ii) the subjects were aged ≥ 59 years without mental illnesses, (iii) an intervention arm performing MBI compared to a non-exercise control group (e.g., wait-list or usual care), (iv) psychological health outcomes related to QoL, depressive symptoms, FoF or sleep quality were assessed and (v) a PEDro score of ≥ 5 . The interventions of the included studies were sub-grouped into Tai Chi/Qigong (TCQ) and Yoga/Pilates (YP). Statistical analyses were conducted using a random-effects inverse-variance model.

RESULTS: Thirty-seven randomized controlled trials (RCTs) (comprising 3224 participants) were included. Small to moderate-but-significant overall effect sizes favoring experimental groups (Hedges' g : 0.25 to 0.71) compared to non-exercise control groups were observed in all outcomes (all p values ≤ 0.007), apart from one subdomain of quality of life (i.e., social functioning, $p = 0.15$). Interestingly, a significant larger effect on QoL and depressive symptoms with increasing training frequency was found for TCQ ($p = 0.03$; $p = 0.004$).

CONCLUSIONS: MBI involving meditative movements may serve as a promising opportunity to improve psychological health domains such as QoL, depressive symptoms, FoF and sleep quality in older adults. Hence, these forms of exercise may represent potential preventive measures regarding the increase of late-life mental disorders, which need to be further confirmed by future research.

Language: en

Keywords

prevention; Tai Chi; Yoga; Pilates; psychological health; psychological symptoms; Qigong

Falls in elder ones

Jeergal VA, Upadhye AJ, Upadhye JJ. *Int. J. Community Med. Public Health (Gujarat)* 2020; 7(6): 2372-2376.

(Copyright © 2020, Medip Academy)

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Abstract

BACKGROUND: Falls are a common and serious health problem with devastating consequences. The aim of present study was to find the prevalence of fall in elder ones and search for the causes so that preventive measures can be taken.

Methods: 102 participants including males and females were interviewed to find the prevalence and causes of fall from 1st January to 29th February 2020. Data was collected and analyzed.

Results: In present study, there was history of fall in 12 (25%) males and 22 (40.74%) females. 3 (6.25%) males and 8 (14.81%) females had history of one fall, 4 (8.33%) males and 9 (16.66%) females had history of 3 falls while 5 (10.41%) males and 5 (9.25%) females had history of more than two falls. In fallens, 10 (83.33%) males and 17 (77.27%) females were above 80 years of age. Fall was associated with fracture in 4 (33.33%) males and 7 (31.81%) females. Diabetes was present in 25 (52.08%) males and 40 (74.07%) females, hypertension was seen in 30 (62.5%) males and 23 (42.59%) females while Coronary heart disease was present in 13 (27.08%) males and 8 (14.81%) females.

Conclusions: Prevalence of fall in senior citizens in our study was 25% in males and 40.74% in females. The major contributing factors for fall injuries were aging, visual impairment, previous history of fall, depression, and joint problem. Females had a higher risk of fall compared to males.

Language: en

Foot rotation and the risk of falls in older women: a cross-sectional study

Kasović M, Štefan L, Zvonař M. PLoS One 2020; 15(9): e0239065.

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Abstract

Although previous evidence has shown that deviated foot structure and function are associated with falls, little is known of the association between foot rotations and falls in apparently healthy older adults. Therefore, the main purpose of the study was to determine the associations between foot rotation and falls. In this cross-sectional study, we recruited 120 older women (mean±SD; age 71.01±6.77 years; height 158.92±21.41 cm; weight 70.29±12.97 kg; body-mass index 26.79±4.42 kg/m²). Foot rotations were assessed by using pressure platform (Zebris manufacturer, Munich, Germany), while the risk of falls was assessed by using Downtown Fall Risk Index questionnaire. Correlations and multiple regression models were applied to calculate the associations. In unadjusted model, higher foot rotation was associated with higher risk of falls ($\beta = 0.14$, $p < 0.001$ for both feet). In a model adjusted for age, body-mass index, foot pain and fitness index, higher foot rotation remained associated with higher risk of falls ($\beta = 0.10$, $p < 0.001$ for both feet). Our study shows that older adults with higher foot rotation are at higher risk of falls. Special interventions aiming to correct for deviated foot function in older women are warranted.

Language: en

Home-modification interventions addressing falls and participation in activities of daily living among older adults: a scoping review protocol

Georlee GM, U A, Dat PN, Tuan NK, Mehrotra S. *BMJ Open* 2020; 10(9): e039742.

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Abstract

INTRODUCTION: Falls are the second leading reason for incidental or unexpected deaths worldwide. Many older adults who fall, regardless of whether they are injured or not, tend to experience fear of fall and this can lead to decreased participation in activities of daily living (ADLs). Subsequent falls lead to weakness, a decline in physical functioning, increased chances of falling and a negative impact on the instrumental ADLs. Here, we present our scoping review protocol to appraise the literature to describe and explain the home-modification interventions used by occupational therapists to address falls and participation in ADLs among community-dwelling older adults. We are aiming to review the available home-modification intervention protocols, facilitators and barriers to such interventions, and the experiences of occupational therapists and clients after receiving these interventions.

METHODS AND ANALYSIS: This scoping review protocol follows existing guidelines for scoping reviews with a particular attention on Arksey and O'Malley (2005) and Colquhoun et al (2014). We will include the following databases: Scopus, Web of Science, PubMed, ProQuest, Cumulative Index to Nursing and Allied Health Literature and Google Scholar. We plan to conduct the literature search from August 16, 2020 to September 15, 2020. Two reviewers will independently screen eligible studies for inclusion. We will extract the bibliographic data, study design, details of the intervention provided, outcomes and experiences of occupational therapists and clients, and further organise them for better understanding.

ETHICS AND DISSEMINATION: As secondary data analysis, this scoping review does not require ethics approval.

RESULTS will summarise and disseminate the existing literature related to home-modification interventions provided by occupational therapists addressing falls and participation in ADLs among community-dwelling older adults. We plan to disseminate the results through peer-reviewed journals and conferences, targeting occupational therapists, other rehabilitation workers, researchers and policy makers.

Language: en

Keywords

public health; rehabilitation medicine; geriatric medicine

Recruitment and retention of older adults in assisted living facilities to a clinical trial using technology for falls prevention: a qualitative case study of barriers and facilitators

Meekes WMA, Ford C, Stanmore EK. Health Soc. Care Community 2020; ePub(ePub): ePub.

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Abstract

Older adults often have health complexities and higher levels of attrition. Even though they are the main users of healthcare, they are often not included in health research because the health research may not be well designed to accommodate their evolving health needs. One research area in which participation of older adults is essential focuses on improving physical function. In this field, there are many innovations and new technologies developed. Barriers and facilitators to recruit older adults to research that improves physical function by using technology are not well explored yet. This study aims to explore barriers and facilitators regarding recruitment and retention of older adults living in Assisted Living Facilities to a randomised controlled trial study that aimed to improve physical function by using technology. Nine semi-structured interviews were conducted with four Scheme Managers, three therapists and two researchers. The interviews were transcribed. After open, axial and selective coding, the codes were thematic analysed in ATLAS.ti. Scheme Managers, therapists, researchers and older adults' peers appear to play an important role in the recruitment and retention of older adults living in Assisted Living Facilities. Additionally, the technology itself and the presentation of the research appear to influence recruitment. Creating a social setting, inviting people face-to-face, demonstrating the technology, showing the benefits by presenting results from a pilot study and alleviating people's fears were experienced as important factors for recruitment. The results from this study can help other researcher to improve recruitment and retention strategies so evidence-based practice in care for older adults can be improved to enhance quality of life of older adults.

Language: en

Keywords

older adults; falls prevention; technology; exercise/physical activity; recruitment and retention

Systematic review and meta-analysis of intervention studies with general practitioner involvement focused on falls prevention for community-dwelling older people

Mackenzie L, Beavis AM, Tan ACW, Clemson L. J. Aging Health 2020; ePub(ePub): ePub.

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DOI 10.1177/0898264320945168 **PMID** 32912102

Abstract

OBJECTIVES: Falls are a significant health problem for the ageing population. This review aimed to identify effective falls prevention interventions with involvement of general practitioners (GPs).

METHODS: Systematic review of randomised controlled trials conducted from 1999-2019, with meta-analysis. Searches located 2736 articles. A quality assessment was conducted of all included studies.

RESULTS: 21 randomised controlled trials met the inclusion criteria and 19 studies could be included in a meta-analysis. Overall, studies were not effective for reducing multiple falls (Relative Risk (RR) 1.16, 95% CI:0.97-1.39 and $p = .10$) or reducing one or more falls (RR:0.91, 95% CI:0.82-1.01 and $p = .08$), but were effective for reducing injurious falls (RR:0.76, 95% CI:0.66-0.87 and $p = .001$).

DISCUSSION: Studies involving the GP in an active role and aligned with the primary care context were effective. The fidelity of interventions was limited by independent GP decisions and older participants being required to initiate the intervention.

Language: en

Keywords

accidental falls; primary health care; falls risk; healthy-ageing

Automatic fall detection using region-based convolutional neural network

Hader GK, Ben Ismail MM, Bchir O. *Int. J. Inj. Control Safe. Promot.* 2020; ePub(ePub): ePub.

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Abstract

The common classifiers usually used to detect fall incidents depend on building and maintaining complex feature extraction for accurate machine learning tasks. However, these efforts have not succeeded in determining an ideal classifier or feature extraction for fall detection. In this research, we address the feature extraction problem along with the choice of the most appropriate classifier by using deep learning where the most prominent features are learned over the numerous layers of the network. More specifically, a general framework that relies on a faster region-based convolutional neural network was designed and developed to recognize the fall incidents. In particular, we designed three custom architectures and exploited transfer learning by using pre-trained networks such as the VGG-16 and AlexNet to overcome the fall detection challenge. The performance of the proposed networks showed the advantage of the pre-trained networks, where VGG-16 scored highest in those measures followed by AlexNet, the custom networks showed impressive results that were close to the pre-trained networks.

Language: en

Keywords

fall detection; Machine learning; digital image processing; neural networks; transfer learning

Incidence and circumstances of falls among middle-aged women: a cohort study

Wang M, Wu F, Callisaya ML, Jones G, Winzenberg T. *Osteoporos. Int.* 2020; ePub(ePub): ePub.

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Abstract

This was the first study assessing falls prospectively in middle-aged women. The 1-year incidence was 42% for any fall, which suggest falls are a major issue in middle-aged women. Middle-aged women, particularly those sustaining a fall, could be a target group for fall-prevention strategies.

PURPOSE: Incidence and circumstances of falls in middle-aged people are poorly understood. This cohort study aimed to elucidate the incidence and circumstances of falls over 1 year in middle-aged women.

METHODS: Falls were recorded monthly for 1 year by questionnaire in 2017-2019 in a population-based sample of women aged 41-62 years. The incidence of falls and injurious falls and related circumstances were descriptively analysed.

RESULTS: Of 273 women, 115 sustained 209 falls. The 1-year incidence was 42% for any fall, 17% for multiple (two or more) falls, and 24% for injurious falls. The incidence was greater in older age groups for any fall (33, 45, and 44% for people aged < 50, 50-55, and > 55 years, respectively), multiple falls (7, 14, and 22%) and injurious falls (15, 20, and 28%), although only the incidence of multiple falls was significantly increased across the three age groups ($P = 0.01$). Most falls occurred outdoors (71%) and were attributed to tripping and slipping (60%) **CONCLUSIONS:** Falls are a major issue in middle-aged women, a group that has been largely ignored in the prevention of falls. Middle-aged women, in particular those sustaining a fall, could be a target group for fall-prevention strategies. Future studies are needed to identify risk factors for falling in this population so as inform the development of strategies for preventing falls in middle-aged women.

Language: en

Keywords

Cause; Injury; Location; Longitudinal study; Descriptive analysis

Non-GABA sleep medications, suvorexant as risk factors for falls: case-control and case-crossover study

Ishibashi Y, Nishitani R, Shimura A, Takeuchi A, Touko M, Kato T, Chiba S, Ashidate K, Ishiwata N, Ichijo T, Sasabe M. PLoS One 2020; 15(9): e0238723.

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Abstract

The aim of this study was to examine the risk of falls associated with the use of non-gamma amino butyric acid (GABA) sleep medications, suvorexant and ramelteon. This case-control and case-crossover study was performed at the Kudanzaka Hospital, Chiyoda Ward, Tokyo. A total of 325 patients who had falls and 1295 controls matched by sex and age were included. The inclusion criteria for the case group were hospitalized patients who had their first fall and that for the control were patients who were hospitalized and did not have a fall, between January 2016 and November 2018. The internal sleep medications administered were classified as suvorexant, ramelteon, non-benzodiazepines, benzodiazepines, or kampo. In the case-control study, age, sex, clinical department, the fall down risk score, and hospitalized duration were adjusted in the logistic regression model. In the case-control study, multivariable logistic regression showed that the use of suvorexant (odds ratio [OR]: 2.61, 95% confidence interval [CI]: 1.29-5.28), nonbenzodiazepines (OR: 2.49, 95% CI: 1.73-3.59), and benzodiazepines (OR: 1.65, 95% CI: 1.16-2.34) was significantly associated with an increased OR of falls. However, the use of ramelteon (OR: 1.40, 95% CI: 0.60-3.16) and kampo (OR: 1.55, 95% CI: 0.75-3.19) was not significantly associated with an increased OR of falls. In the case-crossover study, the use of suvorexant (OR: 1.78, 95% CI: 1.05-3.00) and nonbenzodiazepines (OR: 1.63, 95% CI: 1.17-2.27) was significantly associated with an increased OR of falls. Similar patterns were observed in several sensitivity analyses. It was suggested that suvorexant increases the OR of falls. This result is robust in various analyses. This study showed that the risk of falls also exists for non-GABA sleep medication, suvorexant, and thus it is necessary to carefully prescribe hypnotic drugs under appropriate assessment.

Language: en

Occurrence of traumatic brain injury due to short falls with or without a witness by a nonrelative in children younger than 2 years

Amagasa S, Uematsu S, Tsuji S. *J. Neurosurg. Pediatr.* 2020; ePub(ePub): ePub.

(Copyright © 2020, American Association of Neurological Surgeons)

DOI 10.3171/2020.6.PEDS20314 PMID 32916651

Abstract

OBJECTIVE: There is disagreement about the occurrence of severe traumatic brain injury, especially subdural hematoma, caused by short falls in very young children. To verify intracranial injury due to these falls and examine its characteristics, the authors compared infants and toddlers with head trauma witnessed by a nonrelative with those whose injuries were not witnessed by a nonrelative.

METHODS: The authors retrospectively reviewed clinical records of children younger than 2 years with head trauma due to a short fall who visited the emergency department of the National Center for Child Health and Development in Japan between April 2015 and March 2018. Patients were classified into two groups: falls that were witnessed by a nonrelative and falls not witnessed by a nonrelative. The authors compared the age in months, sex, mechanism of injury, fall height, prevalence rate of intracranial injury, skull fracture, type of traumatic brain injury, retinal hemorrhage, rib or long-bone fracture, and outcomes between patients whose fall was witnessed by a nonrelative and those whose fall was not witnessed by a nonrelative.

RESULTS: Among 1494 patients included in the present analysis, 392 patients were classified into the group of falls witnessed by a nonrelative, and 1102 patients were classified into the group of falls that were not witnessed by a nonrelative. The prevalence rates of intracranial injury, skull fracture, epidural hematoma, and subarachnoid hemorrhage were equal between the groups. The prevalence rate of subdural hematoma in the group whose falls were witnessed by a nonrelative was significantly lower than that of the other group ($p = 0.027$). There were no patients with subdural hematoma, retinal hemorrhage, or neurological sequelae in the group whose fall was witnessed by a nonrelative.

CONCLUSIONS: Subdural hematoma, retinal hemorrhage, and neurological sequelae due to short falls were not seen after witnessed falls in the present study.

Language: en

Keywords

child; infant; abusive head trauma; AHT = abusive head trauma; EDH = epidural hematoma; ICI = intracranial injury; retinal hemorrhage; SAH = subarachnoid hemorrhage; SDH = subdural hematoma; subdural hematoma