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A review of new insights on the association between hearing loss and cognitive decline in ageing

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DOI 10.14639/0392-100X-993 **PMID** 27214827

Abstract

Age-related hearing loss (ARHL) has a multifactorial pathogenesis and it is an inevitable hearing impairment associated with reduction of communicative skills related to ageing. Increasing evidence has linked ARHL to more rapid progression of cognitive decline and incidental dementia. Many aspects of daily living of elderly people have been associated to hearing abilities, showing that hearing loss (HL) affects the quality of life, social relationships, motor skills, psychological aspects and function and morphology in specific brain areas. Epidemiological and clinical studies confirm the assumption of a relationship between these conditions. However, the mechanisms are still unclear and are reviewed herein. Long-term hearing deprivation of auditory inputs can impact cognitive performance by decreasing the quality of communication leading to social isolation and depression and facilitate dementia. On the contrary, the limited cognitive skills may reduce the cognitive resources available for auditory perception, increasing the effects of HL. In addition, hearing loss and cognitive decline may reflect a 'common cause' on the auditory pathway and brain. In fact, some pathogenetic factors are recognised in common microvascular disease factors such as diabetes, atherosclerosis and hypertension. Interdisciplinary efforts to investigate and address HL in the context of brain and cognitive ageing are needed. Surprisingly, few studies have been addressed on the effectiveness of hearing aids in changing the natural history of cognitive decline. Effective interventions with hearing aids or cochlear implant may improve social and emotional function, communication, cognitive function and positively impact quality of life. The aim of this review is to overview new insights on this challenging topic and provide new ideas for future research.

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Association of low back and knee pain with falls in Japanese community-dwelling older adults: a 3-year prospective cohort study

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Geriatr. Gerontol. Int. 2016; ePub(ePub): ePub.

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Abstract

AIM: To examine whether the chronicity and intensity of low back pain (LBP) or knee pain (KP) was associated with the occurrence of falls among a community-dwelling older population.

METHODS: This was a community-based 3-year prospective cohort study. In 2009, baseline questionnaires were mailed to 3080 randomly selected residents aged 60-79 years; 2534 residents (82.3%) responded to the baseline survey, and 1- and 3-year follow-up surveys were subsequently mailed to them. The data for 1890 respondents who had no falls in the past year at baseline were analyzed. Associations between pain status (chronicity, intensity and persistence) and the

occurrence of falls were analyzed by multivariable-adjusted logistic regression.

RESULTS: A total of 197 (13.6%) participants had at least one fall during 12 months at 3-year follow up; of those, 68 (4.8%) had multiple falls, and 65 (4.5%) resulted in an injury. Chronicity and intensity of LBP were associated with injurious falls (P for trend = 0.033 and P for linearity = 0.041, respectively), and KP was associated with at least one fall (P for trend = 0.021 and P for linearity = 0.040, respectively). In addition, participants who had chronic pain persistently at both baseline and 1-year follow up had a higher risk of falls (LBP for injurious falls; adjusted odd ratio 2.46, 95% confidence interval 1.08-5.63, KP for at least one fall; adjusted odd ratio 2.39, 95% confidence interval 1.29-4.44), compared with those who had no pain at both time-points.

CONCLUSIONS: LBP and KP chronicity, intensity and persistence of chronic pain were associated with a greater risk of falls in older adults.

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Do fall-risk-increasing drugs have an impact on mortality in older hip fracture patients? A population-based cohort study

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Clin. Interv. Aging 2016; 11: 489-496.

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Abstract

OBJECTIVE: The aim of this study was to assess the mortality in hip fracture patients with regard to use of fall-risk-increasing drugs (FRIDs), by comparing survival in exposed and nonexposed individuals.

DESIGN: This was a general population-based cohort study. **SETTINGS:** Data on hip fracture patients were retrieved from three national databases. **PARTICIPANTS:** All hip fracture patients aged 60 years or older in a Swedish county in 2006 participated in this study. **MEASUREMENTS:** We studied the mortality in hip fracture patients by comparing those exposed to FRIDs, combinations of FRIDs, and polypharmacy to nonexposed patients, adjusting for age and sex. For survival estimates in patients using four or more FRIDs, a Cox regression analysis was used, adjusting for age, sex, and use of any four or more drugs.

RESULTS: First-year all-cause mortality was 24.6% (N=503) in 2,043 hip fracture patients aged 60 years or older, including 170 males (33.8%) and 333 females (66.2%). Patients prescribed four or more FRIDs, five or more drugs (polypharmacy), psychotropic drugs, and cardiovascular drugs showed significantly increased first-year mortality. Exposure to four or more FRIDs (518 patients, 25.4%) was associated with an increased mortality at 30 days with odds ratios (ORs) 2.01 (95% confidence interval [CI] 1.44-2.79), 90 days with OR 1.56 (95% CI 1.19-2.04), 180 days with OR 1.54 (95% CI 1.20-1.97), and 365 days with OR 1.43 (95% CI 1.13-1.80). Cox regression analyses adjusted for age, sex, and use of any four or more drugs showed a significantly higher mortality in patients treated with four or more FRIDs at 90 days (P=0.015) and 180 days (P=0.012) compared to patients treated with three or less FRIDs.

CONCLUSION: First-year all-cause mortality was significantly higher in older hip fracture patients exposed before the fracture to FRIDs, in particular to four or more FRIDs, polypharmacy,

psychotropic, and cardiovascular drugs. Interventions aiming to optimize both safety and benefit of drug treatment for older people should include limiting the use of FRIDs.

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Effects of Buffalo home-based functional exercise in community-dwelling older adults with medium to high fall risks - a proof of concept

Tomita MR, Langan J, Persons K, Wilber M, Naughton BJ.

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Abstract

BACKGROUND: Exercise plays an important role in maintaining functional mobility as we age.

Therefore, finding approaches that boost participation and effectiveness of home-based exercise is essential, particularly for older adults with lower function. A geriatric rehabilitation team developed Functional Exercise (BFE), which encourages exercise by relating and pairing it to daily activities.

OBJECTIVE: This study was to determine the effectiveness of BFE on increasing exercise adherence and reducing falls and fall risks in community dwelling older-adults with medium to high fall risk.

METHODS: This randomized controlled study with a 12-week home-based exercise intervention recruited 21 enrollees of the Program of All-inclusive Care for the Elderly at one site. Therapists prescribed BFE for 11 participants and conventional home-exercise for 10 participants. Fall risk outcome measures included ankle strength, objective and subjective balance, physical performance, function and health.

RESULTS: Both groups improved in levels of the Short Physical Performance Battery, but only the BFE group improved in balance confidence ($p=.028$) and Instrumental Activities of Daily Living ($p=.019$). Beyond 6 weeks of BFE, no falls were reported in the BFE group. Exercise minutes per week for home-based exercise were similar. BFE participants reported that BFE was fun and easy to do, and expressed a willingness to continue the BFE.

CONCLUSION: Despite similar adherence with both exercise programs, BFE has advantages over conventional home exercise. Associating exercise with daily activities can offer a more effective approach to home exercise programs. Meaningfulness of exercise may be the reason. Further larger studies are encouraged.

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Prevalence of insomnia and its risk factors in older individuals: a community-based study in four cities of Hebei Province, China

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Sleep Med. 2016; 19: 116-122.

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Abstract

OBJECTIVE: To examine the epidemiology of sleep problems and insomnia among the community older individuals in Hebei Province, China, and to investigate the potential sociodemographic and

clinical correlates and medication use.

METHODS: This cross-sectional study was conducted with community adults, aged 60 years or older, who resided in four major cities in Hebei province. Basic sociodemographic and clinical data were collected and analyzed. A total of 3176 older adults (1292 men, 70.2 ± 6.8 years; 1884 women, 68.8 ± 6.7 years) were interviewed. All of the participants were interviewed with a standardized questionnaire and underwent insomnia screening.

RESULTS: The prevalence of insomnia was 37.75%. The most common type of sleep disturbance was difficulty maintaining sleep, followed by difficulty initiating sleep and early morning awakening. Never smoking, experiencing the loss of a parent, a history of coronary heart disease, and depression symptoms were independent risk factors for insomnia in men. Occasional drinking was an independent protective factor against insomnia in men. Older age, depression symptoms, a history of cerebral hemorrhage, hyperlipidemia, living without a spouse, and having mild cognitive impairment were independent risk factors for insomnia in women. Only 11.1% of the sample with insomnia were taking sleeping medications regularly.

CONCLUSION: Insomnia is highly prevalent among the community older population in Hebei Province. The percentage of individuals regularly taking sleeping medication is low among those with insomnia. Individuals with complaints of insomnia frequently have poor physical and mental health and may need more medical attention. Comprehensive measures that involve psychosocial and personal behaviors should be implemented to alleviate insomnia in older individuals.

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Quality of life after hip fracture in the elderly: a systematic literature review

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Injury 2016; ePub(ePub): ePub.

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Abstract

BACKGROUND: With an increasing ageing population, hip fractures have become a major public health issue in the elderly. It is important to examine the health status (HS) and health-related quality of life (HRQOL) of the elderly faced with the epidemic of hip fractures.

OBJECTIVE: To provide an overview of reported HS and HRQOL in elderly patients with a hip fracture.

DESIGN: A systematic literature search was performed in Embase, Medline, Web of Science, Scopus, CINAHL, Cochrane, PsycINFO, Pubmed, and Google Scholar in July 2014. Studies which reported the HS or HRQOL based on standardised questionnaires in patients older than 65 years with a hip fracture were considered eligible for inclusion.

RESULTS: After inspecting the 2725 potentially eligible studies, 49 fulfilled the inclusion criteria. All included studies were randomised controlled trials or prospective cohort studies. The methodological quality of the studies was moderate. Patients' functioning on the physical, social, and emotional domains were affected after a hip fracture. The HS and HRQOL of the majority of patients recovered in the first 6 months after fracture. However, their HS did not return to

prefracture level. Mental state, prefracture functioning on physical and psychosocial domains, comorbidity, female gender, nutritional status, postoperative pain, length of hospital stay, and complications were factors associated with HS or HRQOL. Treatment with total hip arthroplasty or hemi-arthroplasty provided better HS than treatment with internal fixation with displaced femoral neck fractures. Supportive psychotherapy in "low-functioning" patients, (home) rehabilitation programmes and nutritional supplementation appeared to have beneficial effects on HS. CONCLUSIONS: Optimizing nutrition intake, (home) rehabilitation programmes, and the possibility for psychological counselling in patients with difficulties in the psychosocial dimensions would be recommended after hip fracture surgery. Besides HS questionnaires like EQ-5D and SF-36, adequate measurements like the WHOQOL-Bref or ICECAP-O are warranted in future studies regarding hip fracture surgery and postoperative treatment options.

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Study of stress variations in single-stance and sideways fall using image-based finite element analysis

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Biomed. Mater. Eng. 2016; 27(1): 1-14.

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Abstract

Image-based finite element analysis (FEA) has been considered an effective computational tool to predict hip fracture risk. The patient specific FEA gives an insight into the inclusive effect of three-dimensional (3D) complex bone geometry, and the distribution of inhomogeneous isotropic material properties in conjunction with loading conditions. The neck region of a femur is primarily the weakest in which fracture is likely to happen, when someone falls. A sideways fall results in the development of greater tensile and compressive stresses, respectively, in the inferior and superior aspects of the femoral neck, whereas the state of stress is reversed in usual gait or stance configuration. Herein, the variations of stresses have been investigated at the femoral neck region considering both single-stance and sideways fall. Finite element models of ten human femora have been generated using Quantitative Computed Tomography (QCT) scan datasets and have been simulated with an equal magnitude of load applied to the aforementioned configurations. Fracture risk indicator, defined as the ratio of the maximum compressive or tensile stress computed at the superior and inferior surfaces to the corresponding yield stress, has been used in this work to measure the variations of fracture risk between single-stance and sideways fall. The average variations of the fracture risk indicators between the fall and stance are at least 24.3% and 8% at the superior and inferior surfaces, respectively. The differences may interpret why sideways fall is more dangerous for the elderly people, causing hip fracture.

PDF Endnote Y

The contribution of postural balance analysis in older adult fallers: A narrative review

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J. Bodyw. Mov. Ther. 2016; 20(2): 409-417.

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(Copyright © 2016, Elsevier Publishing)

DOI 10.1016/j.jbmt.2015.12.008 **PMID** 27210860

Abstract

OBJECTIVE: Falls are a serious health problem for older adults. Several studies have identified the decline of postural balance as one of the main risk factors for falls. Contrary to what may be believed, the capability of force platform measurements to predict falls remains uncertain. The focus of this narrative review is the identification of postural characteristics of older adults at risk of falling using both static and dynamic postural balance assessments.

METHODS: The literature analysis was conducted on Medline/PubMed. The search ended in May 2015.

RESULTS: Centre of pressure (CoP) path length, CoP velocity and sway in medial lateral and anterior-posterior are the variables that distinguish older adult fallers from non-fallers.

DISCUSSION: Recommendations to medical personnel on how to provide efficient balance training for older adults are offered, discussing the relevance and limitations of postural stability on static and dynamic board in falling risk prevention.

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The impact of geographical location on trends in hospitalisation rates and outcomes for fall-related injuries in older people

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DOI 10.1111/1753-6405.12524 **PMID** 27197714

Abstract

OBJECTIVE: This population-based study investigates the influence of geographical location on hospital admissions, utilisation and outcomes for fall-related injury in older adults, adjusting for age, sex and comorbidities.

METHODS: A linked dataset of all admissions of NSW residents aged 65 and older, hospitalised at least once for a fall-related injury between 2003 and 2012, was used to estimate rates of hospitalisations, total lengths-of-stay, 28-day readmissions, and 30-day mortalities. These were standardised for age, sex, comorbidity, and remoteness.

RESULTS: Compared to urban residents, rural residents were hospitalised less ($p < 0.0001$) and hospitalisation rates increased at a lower rate (0.8% vs 2.6% per year) from 2003 to 2012. Rural residents had a shorter median total length of stay (5 vs 7 days, $p < 0.0001$), a higher 28-day readmission rate (18.9% vs 17.0%, $p < 0.0001$) and higher 30-day mortality (5.0% vs 4.9%, $p = 0.0046$).

CONCLUSIONS: Over the study period, rural residents of NSW had lower rates of fall-related injury hospitalisation and a lower annual increase in hospitalisation rates compared to urban residents.

When hospitalised, rural residents had a shorter length-of-stay, but higher rates of readmission and mortality. These differences existed following standardisation. **IMPLICATIONS:** This study highlights the need for further research to characterise and explain this variability.

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The relationship between older adults' risk for a future fall and difficulty performing activities of daily living

Mamikonian-Zarpas A, Laganà L.

J. Aging Gerontol. 2015; 3(1): 8-16.

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(Copyright © 2015, Savvy Science Publisher)

DOI 10.12974/2309-6128.2015.03.01.2 **PMID** 27200366 **PMCID** PMC4869712

Abstract

Functional status is often defined by cumulative scores across indices of independence in performing basic and instrumental activities of daily living (ADL/IADL), but little is known about the unique relationship of each daily activity item with the fall outcome. The purpose of this retrospective study was to examine the level of relative risk for a future fall associated with difficulty with performing various tasks of normal daily functioning among older adults who had fallen at least once in the past 12 months. The sample was comprised of community-dwelling individuals 70 years and older from the 1984-1990 Longitudinal Study of Aging by Kovar, Fitti, and Chyba (1992). Risk analysis was performed on individual items quantifying 6 ADLs and 7 IADLs, as well as 10 items related to mobility limitations. Within a subsample of 1,675 older adults with a history of at least one fall within the past year, the responses of individuals who reported multiple falls were compared to the responses of participants who had a single fall and reported 1) difficulty with walking and/or balance (FRAIL group, n = 413) vs. 2) no difficulty with walking or dizziness (NDW+ND group, n = 415). The items that had the strongest relationships and highest risk ratios for the FRAIL group (which had the highest probabilities for a future fall) included difficulty with: eating (73%); managing money (70%); biting or chewing food (66%); walking a quarter of a mile (65%); using fingers to grasp (65%); and dressing without help (65%). For the NDW+ND group, the most noteworthy items included difficulty with: bathing or showering (79%); managing money (77%); shopping for personal items (75%); walking up 10 steps without rest (72%); difficulty with walking a quarter of a mile (72%); and stooping/crouching/kneeling (70%). These findings suggest that individual items quantifying specific ADLs and IADLs have substantive relationships with the fall outcome among older adults who have difficulty with walking and balance, as well as among older individuals without dizziness or difficulty with walking. Furthermore, the examination of the relationships between items that are related to more challenging activities and the fall outcome revealed that higher functioning older adults who reported difficulty with the 6 items that yielded the highest risk ratios may also be at elevated risk for a fall.

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Chronic obstructive pulmonary disease phenotypes and balance impairment

Voica AS, Oancea C, Tudorache E, Crisan AF, Fira-Mladinescu O, Tudorache V, Timar B.

Int. J. Chron. Obstruct. Pulmon. Dis. 2016; 11: 919-925.

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DOI 10.2147/COPD.S101128 **PMID** 27199555 **PMCID** PMC4857826

Abstract

BACKGROUND/OBJECTIVE: Chronic obstructive pulmonary disease (COPD) is a respiratory disease that results in airflow limitation and respiratory distress, also having many nonrespiratory manifestations that affect both function and mobility. Preliminary evidence suggests that balance deficits constitute an important secondary impairment in individuals with COPD. Our objective was to investigate balance performance in two groups of COPD patients with different body compositions and to observe which of these groups are more likely to experience falls in the future. **METHODS:** We included 27 stable COPD patients and 17 healthy individuals who performed a series of balance tests. The COPD patients were divided in two groups: emphysematous and bronchitic. Patients completed the activities balance confidence scale and the COPD assessment test questionnaire and afterward performed the Berg Balance Scale, timed up and go, single leg stance and 6-minute walking distance test. We analyzed the differences in the balance tests between the studied groups.

RESULTS: Bronchitic COPD was associated with a decreased value when compared to emphysematous COPD for the following variables: single leg stance (8.7 vs 15.6; $P < 0.001$) and activities balance confidence (53.2 vs 74.2; $P = 0.001$). Bronchitic COPD patients had a significantly higher value of timed up and go test compared to patients with emphysematous COPD (14.7 vs 12.8; $P = 0.001$).

CONCLUSION: Patients with COPD have a higher balance impairment than their healthy peers. Moreover, we observed that the bronchitic COPD phenotype is more likely to experience falls compared to the emphysematous phenotype.

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Obesity increases complexity of distal radius fracture in fall from standing height

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J. Orthop. Trauma 2016; ePub(ePub): ePub.

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Abstract [Abstract unavailable]

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Re: the risk of fall and fracture with the initiation of a prostate-selective α antagonist: a population based cohort study

Griebing TL.

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Abstract [Abstract unavailable] Editorial Comment

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Silhouette orientation volumes for efficient fall detection in depth videos

Akagunduz E, Aslan M, Sengur A, Wang H, Ince M.

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Abstract

A novel method to detect human falls in depth videos is presented in this paper. A fast and robust shape sequence descriptor, namely the Silhouette Orientation Volume (SOV), is used to represent actions and classify falls. The SOV descriptor provides high classification accuracy even with a combination of simple associated models such as Bag-of-Words and the Naïve Bayes classifier. Experiments on the public SDU-Fall dataset show that this new approach achieves an up-to 91.89% fall detection accuracy with a single-view depth camera. The classification rate is about 5% higher than the results reported in the literature. An overall accuracy of 89.63% was obtained for the 6-class action recognition, which is about 25% higher than the state of the art. Moreover, a perfect silhouette-based action recognition rate of 100% is achieved on the Weizmann action dataset.

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