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An interdisciplinary intervention for fear of falling: lessons learned from two case studies

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Clin. Gerontol. 2017; ePub(ePub): ePub.

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DOI 10.1080/07317115.2017.1325423 **PMID** 28548888

Abstract

This article describes two case studies using an interdisciplinary intervention for homebound older adults who experience fear of falling, resulting in debility and isolation. The patients discussed received separate home visits from a physical therapist (two and four visits) and psychologist (six and eight visits) and intervention components included an initial assessment of physical ability, prescription of home exercise program, exposure therapy, and cognitive restructuring. Both patients reported satisfaction with the fear of falling intervention and showed improved ability to walk, both in distance and in requiring less assistance. These findings suggest significant positive treatment effects can be achieved through interdisciplinary exposure-based interventions aimed at reducing unrealistic fear of falling and associated avoidance behaviors. Similar interventions should be considered for more systematic evaluation of effects and mechanisms of change as well as inclusion in interdisciplinary treatment planning.

PDF Y Endnote Y

Attitudes of older people with mild dementia and mild cognitive impairment and their relatives about falls risk and prevention: A qualitative study

Peach T, Pollock K, van der Wardt V, das Nair R, Logan P, Harwood RH.

PLoS One 2017; 12(5): e0177530.

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(Copyright © 2017, Public Library of Science)

DOI 10.1371/journal.pone.0177530 **PMID** 28542315

Abstract

OBJECTIVE: To explore the perceptions of older people with mild dementia and mild cognitive impairment, and their family carers, about falling, falls risk and the acceptability of falls prevention interventions.

DESIGN: Qualitative study involving thematic analysis of semi-structured interviews with patient and relative dyads.

PARTICIPANTS AND SETTING: 20 patient/ relative dyads recruited from Memory Assessment Services and Falls Prevention Services in the United Kingdom.

RESULTS: The findings are presented under four key themes: attitudes to falls, attitudes to falls prevention interventions, barriers and facilitators, and the role of relatives. Participants' attitudes to falls interventions were varied and sometimes conflicting. Some worried about falls, but many resisted identifying themselves as potential 'fallers', even despite having fallen, and rejected the idea of needing the help that structured interventions signify. Participants preferred to focus on coping in the present rather than anticipating, and preparing for, an uncertain future. Falls prevention interventions were acknowledged to be valuable in principle and if required in the future but often felt to be not necessary or appropriate at present.

CONCLUSIONS: This study of how persons with cognitive impairment, and their relatives, view falls risk and prevention mirror findings relating to the wider population of older persons without dementia. Participants did not generally see falls prevention interventions as currently relevant to themselves. The challenge for clinicians is how to present interventions with understanding and respect for the older person's identity. They must identify and address goals that patients and relatives value. Simplistic or paternalistic approaches will likely fail. Individualised interventions which focus on maintaining independence and preserving quality of life are more likely to be acceptable by supporting a positive self-image for patients and their relatives.

PDF Y Endnote Y

Care homes needed for new research into managing falls

Mckew M.

Nurs. Older People 2017; 29(5): 6.

(Copyright © 2017, RCN Publishing)

DOI 10.7748/nop.29.5.6.s2 **PMID** 28560920

Abstract

Academics conducting a £1.8 million research project are recruiting care homes to test a new falls procedure. Funded by the National Institute for Health Research, the three-year project involves trials of a new training package and guidelines designed by the University of Nottingham's Division of Rehabilitation and Ageing. The trials are taking place at residential and care homes in the East Midlands, West Yorkshire and East Anglia.

PDF N Endnote Y

Circumstances of falls with fractured femur in residents of Australian nursing homes

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J. Aging Health 2017; ePub(ePub): ePub.

Affiliation: University of Newcastle, New South Wales, Australia.

(Copyright © 2017, Sage Publications)

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Abstract

OBJECTIVE: This study aimed to explore the circumstances and characteristics of falls with fractured femur reported in nursing homes.

METHOD: Mixed methods were used. There were reports on 401 eligible falls from 88 residential care facilities in the Hunter region of Australia. A falls report form was developed for the study and was completed by nursing staff. Information was collected about the circumstances of falls with fractured femur and resident data. Descriptive and qualitative analyses were used.

RESULTS: Falls with fractured neck of femur were associated with being ambulant, having dementia, increasing age, and a high falls risk assessment. Themes from the falls report data were resident-related factors, organizational or environmental issues, and activities at the time of the fall.

DISCUSSION: Falls in residential care settings are very complex and difficult to prevent. Attention should be given to the needs of recently admitted residents and management of the facility environment.

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Cost-effectiveness of a statewide falls prevention program in Pennsylvania: Healthy Steps for Older Adults

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Am. J. Manag. Care 2016; 22(10): 638-644.

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(Copyright © 2016, Intellisphere)

DOI unavailable **PMID** 28557514

Abstract

OBJECTIVES: Pennsylvania's Department of Aging has offered a falls prevention program, "Healthy Steps for Older Adults" (HSOA), since 2005, with about 40,000 older adults screened for falls risk. In 2010 to 2011, older adults 50 years or older who completed HSOA (n = 814) had an 18% reduction in falls incidence compared with a comparison group that attended the same senior centers (n = 1019). We examined the effect of HSOA on hospitalization and emergency department (ED) treatment, and estimated the potential cost savings. **STUDY DESIGN:** Decision-tree analysis.

METHODS: The following were included in a decision-tree model based on a prior longitudinal cohort study: costs of the intervention, number of falls, frequency and costs of ED visits and hospitalizations, and self-reported quality of life of individuals in each outcome condition. A Monte Carlo probabilistic sensitivity analysis assigned appropriate distributions to all input parameters and evaluated model results over 500 iterations. The model included all ED and hospitalization episodes rather than just episodes linked to falls.

RESULTS: Over 12 months of follow-up, 11.3% of the HSOA arm and 14.8% of the comparison group experienced 1 or more hospitalizations (P = .04). HSOA participants had less hospital care when matched for falls status. Observed values suggest expected costs per participant of \$3013 in the HSOA arm and \$3853 in the comparison condition, an average savings of \$840 per person. Results were confirmed in Monte Carlo simulations (\$3164 vs \$3882, savings of \$718).

CONCLUSIONS: The savings of \$718 to \$840 per person is comparable to reports from other falls prevention economic evaluations. The advantages of HSOA include its statewide reach and integration with county aging services.

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Development and evaluation of two web-based interventions for the promotion of physical activity in older adults: study protocol for a community-based controlled intervention trial

Muellmann S, Bragina I, Voelcker-Rehage C, Rost E, Lippke S, Meyer J, Schnauber J, Wasmann M, Toborg M, Koppelin F, Brand T, Zeeb H, Pischke CR.

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(Copyright © 2017, BioMed Central)

DOI 10.1186/s12889-017-4446-x **PMID** 28545506

Abstract

BACKGROUND: Regular physical activity (PA) is a key contributor to healthy ageing. However, despite known health benefits, only one third of older adults in Germany reach the PA levels recommended for persons aged 65 years and above by the World Health Organization. The aim of the current study is to evaluate the effectiveness of two web-based interventions for the initiation

and maintenance of regular PA (i.e., intervention groups 1 and 2) compared to a delayed intervention control group of older adults aged 65 to 75 years.

METHODS/DESIGN: Study participants will be randomly assigned to one of three study arms in five communities in the Bremen-Oldenburg metropolitan region: a) Participants in the first arm will receive access to a web-based intervention for 10 weeks allowing them to track their weekly PA (subjective self-monitoring, intervention group 1); b) participants in the second arm will receive access to the web-based intervention for 10 weeks and, in addition, track PA using Fitbit Zips (objective self-monitoring, intervention group 2); c) participants in the delayed intervention control group will receive access to the intervention implemented in the first study arm after completion of the 12-week follow-up in the other two groups within each community. In addition, weekly group meetings in the communities will be offered to study participants in the intervention groups providing the opportunity to address questions related to the use of the website and to practice PA in groups (e.g., neighborhood walks, strength and balance exercises). To evaluate short-term effects of the intervention on physical and psychological health, PA, physical fitness, and cognitive and psychological variables will be assessed at baseline and 12-week follow-up.

DISCUSSION: This study will provide answers regarding acceptance and effectiveness of web-based interventions promoting uptake and maintenance of regular PA in persons aged 65-75 years. Study findings will contribute to a growing body of evidence in Germany concerning the role of community-based interventions for the promotion of PA and healthy ageing in older adults. **TRIAL REGISTRATION:** German Clinical Trials Register DRKS00010052 (Date of registration 07-11-2016).

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Effect of exercise and cognitive training on falls and fall-related factors in older adults with mild cognitive impairment: a systematic review

Lipardo DS, Aseron AMC, Kwan MM, Tsang WWN.

Arch. Phys. Med. Rehabil. 2017; ePub(ePub): ePub.

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DOI 10.1016/j.apmr.2017.04.021 **PMID** 28554873

Abstract

OBJECTIVE: To evaluate the effect of exercise and cognitive training on falls reduction and on factors known to be associated with falls among community-dwelling older adults with mild cognitive impairment (MCI).

DATA SOURCES: Seven databases (PubMed, CINAHL, Cochrane Library, Web of Science, ProQuest, ProQuest Dissertations and Theses, and Digital Dissertation Consortium) and reference lists of pertinent articles were searched.

STUDY SELECTION: Randomized controlled trials (RCTs) on the effect of exercise, cognitive training or combination of both on falls and factors associated with falls such as balance, lower limb muscle strength, gait and cognitive function among community-dwelling older adults with MCI were included.

DATA EXTRACTION: Data were extracted using the modified JBI-MAStARI tool. Study quality was assessed using the JBI-MAStARI appraisal instrument. **DATA SYNTHESIS:** Seventeen RCTs (1679 participants; mean age of 74.4 ±2.4) were included. Exercise improved gait speed and global cognitive function in MCI; both are known factors associated with falls. Cognitive training alone had

no significant effect on cognitive function while combined exercise and cognitive training improved balance in MCI. Neither fall rate nor the number of fallers was reported in any of the studies included.

CONCLUSIONS: This review suggests that exercise, and combined exercise and cognitive training improve specific factors associated with falls such as gait speed, cognitive function, and balance, in MCI. Further research on the direct effect of exercise and cognitive training on fall rate and incidence in older adults with MCI with larger sample size is highly recommended.

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PDF Y Endnote Y

Examining fall recurrence risk of homebound Hispanic older adults receiving home care services

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Hisp. Health Care Int. 2017; 15(1): 20-26.

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Abstract

INTRODUCTION: Unintentional falls and injuries is a major problem among older adults and the fourth cause of death in the United States. A previous fall event doubles the risk of recurrence and lessens the person's quality of life. Hispanic older adults have higher rates of disability and lower independent functioning due to poor medical health and risk for fall recurrence. Most fall studies focus on fall risk with few studies on fall recurrence in older adults receiving home health care services unrelated to fall incident.

METHOD: A descriptive pilot study of 30 homebound Hispanic older adults receiving home care services who reported a fall within 3 months was conducted by a multidisciplinary team to evaluate risk of fall recurrence.

RESULTS: A heightened risk for fall recurrence was identified with high number of chronic illnesses, high intake of medications, vision problems, and prevalence of urinary incontinence.

CONCLUSION: Findings highlight significant number of intrinsic factors for fall risk recurrence and injuries in a Hispanic older adults population that is homebound and receiving home care services. A multidisciplinary evaluation and culturally appropriate interventions to lessen the risk of fall recurrence are recommended.

PDF Y Endnote Y

Fall risk screening protocol for older hearing clinic patients

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Int. J. Audiol. 2017; ePub(ePub): ePub.

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DOI 10.1080/14992027.2017.1329555 **PMID** 28541763

Abstract

OBJECTIVE: The primary purposes of this study were (1) to describe measures that may contrast audiology patients who fall from those who do not fall and (2) to evaluate the clinical performance of measures that could be easily used for fall risk screening in a mainstream audiology hearing clinic.

DESIGN: Cross-sectional study Study sample: Thirty-six community-dwelling audiology patient

participants and 27 community-dwelling non-audiology patients over 60 years of age.

RESULTS: The Hearing Handicap Inventory for the Elderly (HHIE) most accurately identified patients with a recent fall (sensitivity: 76.0%), while the Dizziness Handicap Inventory (DHI) most accurately identified patients without a recent fall (specificity: 90.9%). A combination of measures used in a protocol-including HHIE, DHI, number of medications, and the Timed Up and Go test-resulted in good, accurate identification of patients with or without a recent history of falls (92.0% sensitivity, 100% specificity).

CONCLUSIONS: This study reports good sensitivity and excellent specificity for identifying patients with and without a recent history of falls when measures were combined into a screening protocol. Despite previously reported barriers, effective fall risk screenings may be performed in hearing clinic settings with measures often readily accessible to audiologists.

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Feasibility and efficacy of a multi-factorial intervention to prevent falls in older adults with cognitive impairment living in residential care (ProF-Cog). A feasibility and pilot cluster randomised controlled trial

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BMC Geriatr. 2017; 17(1): e115.

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(Copyright © 2017, BioMed Central)

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Abstract

BACKGROUND: Falls are common in people with dementia living in residential care. The ProF-Cog intervention was developed to address fall risk factors specific to this population. The aim of this study was to evaluate the safety, acceptability, and feasibility of the intervention and provide an estimate of its efficacy.

METHODS: This was a cluster randomised controlled pilot study undertaken in care homes in London, UK. All permanent residents living in participating homes who were not terminally ill were invited to participate. The intervention included an assessment of falls risk factors followed by a tailored intervention which could include dementia care mapping, comprehensive geriatric assessment, occupational therapy input and twice-weekly exercise for 6 months as required to target identified risk factors. The control group received usual care without a falls risk assessment. Standing balance was the primary outcome. This and other outcome measures were collected at baseline and after 6 months. Falls were recorded for this period using incident reports. Changes were analysed using multi-level modelling. Adherence to the interventions, adverse events and trial feasibility were recorded.

RESULTS: Nine care homes enrolled in the study with a total 191 participants (51% of those eligible); five homes allocated to the intervention with 103 participants, and four homes to the usual care control group with 88 participants. The intervention was safe with only one reported fall whilst undertaking exercise. Adherence to agreed recommendations on activity and the environment was modest (21 and 45% respectively) and to exercise was poor (41%). Balance scores (score range 0-49) analysed on 100 participants decreased by a mean of 3.9 in the control and 5.1 in the intervention groups, a non-significant difference ($p = 0.9$). In other measures, both groups declined equally and there was no difference in falls rates (IRR = 1.59 95% CI 0.67-3.76).

CONCLUSION: The intervention was safe but not clinically effective. Poor adherence suggests it was not an acceptable or feasible intervention. **TRIAL REGISTRATION:** ISRCTN00695885. Registered 26th March 2013.

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Human-centered design study: enhancing the usability of a mobile phone app in an integrated falls risk detection system for use by older adult users

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JMIR Mhealth Uhealth 2017; 5(5): e71.

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Abstract

BACKGROUND: Design processes such as human-centered design (HCD), which involve the end user throughout the product development and testing process, can be crucial in ensuring that the product meets the needs and capabilities of the user, particularly in terms of safety and user experience. The structured and iterative nature of HCD can often conflict with the necessary rapid product development life-cycles associated with the competitive connected health industry.

OBJECTIVE: The aim of this study was to apply a structured HCD methodology to the development of a smartphone app that was to be used within a connected health fall risk detection system. Our methodology utilizes so called discount usability engineering techniques to minimize the burden on resources during development and maintain a rapid pace of development. This study will provide prospective designers a detailed description of the application of a HCD methodology.

METHODS: A 3-phase methodology was applied. In the first phase, a descriptive "use case" was developed by the system designers and analyzed by both expert stakeholders and end users. The use case described the use of the app and how various actors would interact with it and in what context. A working app prototype and a user manual were then developed based on this feedback and were subjected to a rigorous usability inspection. Further changes were made both to the interface and support documentation. The now advanced prototype was exposed to user testing by end users where further design recommendations were made.

RESULTS: With combined expert and end-user analysis of a comprehensive use case having originally identified 21 problems with the system interface, we have only seen and observed 3 of these problems in user testing, implying that 18 problems were eliminated between phase 1 and 3. Satisfactory ratings were obtained during validation testing by both experts and end users, and final testing by users shows the system requires low mental, physical, and temporal demands according to the NASA Task Load Index (NASA-TLX).

CONCLUSIONS: From our observation of older adults' interactions with smartphone interfaces, there were some recurring themes. Clear and relevant feedback as the user attempts to complete a task is critical. Feedback should include pop-ups, sound tones, color or texture changes, or icon changes to indicate that a function has been completed successfully, such as for the connection sequence. For text feedback, clear and unambiguous language should be used so as not to create anxiety, particularly when it comes to saving data. Warning tones or symbols, such as caution symbols or shrill tones, should only be used if absolutely necessary. Our HCD methodology, designed and implemented based on the principles of the International Standard Organization (ISO) 9241-210

standard, produced a functional app interface within a short production cycle, which is now suitable for use by older adults in long term clinical trials.

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Identification of falls subgroups through semantic similarity analysis

Almohaimeed M, Brass A, Ba-Dhfari T.

Int. J. Popul. Data Sci. 2017; 1(1): e129.

(Copyright © 2017, Swansea University)

DOI 10.23889/ijpds.v1i1.129 **PMID** unavailable

Abstract

OBJECTIVES: The information contained within medical data is often used to make new medical discoveries. However, the most common way to use such data has been to query the data to answer very specific questions. For example, does having diabetes cause some patients to experience falls? If researchers have good questions, then the data can provide good answers. But are there any other equally important questions that could be asked of the data that people haven't yet thought to ask?

We are exploring a new strategy that we have developed to look for unusual and interesting patterns about falls in the elderly at subgroups level to see the different risks associated with different groups. Some of these risks will be associated with questions that are already well-known, but some should point to new and important questions that have not yet been asked. This opens up a better opportunity to identify patients at risk of falls, helping guide policy so as to reduce falls.

APPROACH: We mapped patient records into a low dimensional space using the notions of semantic similarity (Resnik node-based) and machine learning (principal component analysis) to provide a good representation of the data. This representation was used for clustering and visualisation through the DBSCAN algorithm. To look for enrichment in the resultant clusters, we analysed each cluster separately and look at the sets of patients defined in these clusters. Then, classic data mining techniques were used in order to generate hypotheses. The associations found were then be tested using more traditional comorbidity measures such as relative risk (RR) and its confidence intervals.

RESULTS: We demonstrated the methodology on 589,169 older adults from clinical practice research datalink (CPRD). We successfully identified six distinct subgroups of falls from the elderly population who are identified with different risks. Some of the associations found are well defined in the literature; for example, depression and musculoskeletal conditions are significantly associated with falls. However, a number of associations are not reported in the clinical literature. Such hypotheses need further exploration by epidemiologists.

CONCLUSION: Future work will focus on incorporating temporal dimension which might provide useful insights into missed opportunities detection and risk modelling and understanding of a disease. Last, this methodology holds promises for the study of other complex diseases using any source of data which are described using terms from taxonomies or ontologies.

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Knowledge levels of falling risks of older nursing students

Sert H, Seven A, Çetinkaya S, Pelin M.

Am. Acad. Sch. Res. J. 2017; 9(3): e1944.

(Copyright © 2017, American Academic and Scholarly Research Journal)

DOI unavailable **PMID** unavailable

Abstract

A descriptive and cross-sectional study of 107 senior nursing students in order to determine the knowledge level of the nursing senior students about the risk of falling age; The risk of falling in the elderly is higher in the total scores of the students ($75,88 \pm 1,32$); Age and the risk of falls in elderly people were influenced by the knowledge of the scales used for the risk of falling in hospitals.

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Long-term effectiveness of a multifactorial fall and fracture prevention program in Bavarian nursing homes: an analysis based on health insurance claims data

Schulz C, Lindlbauer I, Rapp K, Becker C, König HH.

J. Am. Med. Dir. Assoc. 2017; 18(6): 552.e7-552.e17.

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DOI 10.1016/j.jamda.2017.03.012 **PMID** 28549706

Abstract

OBJECTIVE: Femoral fractures are frequently consequences of falls in nursing homes and are associated with considerable costs and unfavorable outcomes such as immobility and mortality. The purpose of this study was to examine the long-term effectiveness of a multifactorial fall and fracture prevention program in nursing homes in terms of reducing femoral fractures.

DESIGN: Retrospective cohort study.

SETTING: Nursing homes.

PARTICIPANTS: Health insurance claims data for 2005-2013 including 85,148 insurants of a sickness fund (Allgemeine Ortskrankenkasse Bayern), aged 65 years or older and living in 802 nursing homes in Bavaria, Germany.

INTERVENTION: The fall prevention program was implemented stepwise in 4 time-lagged waves in almost 1,000 nursing homes in Bavaria, Germany, and was financially supported by a Bavarian statutory health insurance for the initial period of 3 years after implementation. The components of Bavarian Fall and Fracture Prevention Program were related to the staff (education), to the residents (progressive strength and balance training, medication, hip protectors), and suggested environmental adaptations as well as fall documentation and feedback on fall statistics.

MEASUREMENTS: Data were used to create an unbalanced panel data set with observations per resident and quarterly period. We designed each wave to have 9 quarters (2.25 years) before implementation and 15 quarters (3.75 years) as follow-up period, respectively. Time trend-adjusted logistic generalized estimating equations were used to examine the impact of implementation of the fall prevention program on the likelihood of femoral fractures, controlling for resident and nursing home characteristics. The analysis took into account that the fall prevention program was implemented in 4 time-lagged waves.

RESULTS: The implementation of the fall prevention program was not associated with a significant reduction in femoral fractures. Only a transient reduction of femoral fractures in the first wave was observed. Patient characteristics were positively associated with the likelihood of femoral fractures ($P < .001$); women compared to men [odds ratio (OR) = 0.877], age category 2 (OR = 1.486) and 3 (OR = 1.973) compared to category 1, care level 1 compared to 2 (OR = 0.897) and 3 (OR = 0.426), and a prior fracture (OR = 2.230) significantly increased the likelihood of a femoral fracture.

CONCLUSIONS: There was no evidence for the long-term effectiveness of the fall prevention program in nursing homes. The restriction of the transient reduction to the first implementation wave may be explainable by a higher motivation of nursing homes starting first with the fall prevention program. Efforts should be directed to further identify factors that determine the long-term effectiveness of fall prevention programs in nursing homes.

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Older people's experiences of falling and perceived risk of falls in the community: a narrative synthesis of qualitative research

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Int. J. Older People Nurs. 2017; ePub(ePub): ePub.

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(Copyright © 2017, John Wiley and Sons)

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Abstract

AIM: To examine qualitative research exploring older people's experiences of falling and the perceived risk of falling in the community. This will contribute new insights into how falling is perceived by the older community.

BACKGROUND: Falls are a major problem for older people and healthcare services across the world. Accidental falls in the community are a persistent problem that is generally recognised as an intrinsic risk of ageing. This review provides a new synthesis of evidence that considers older people's perception of falls in the community as new insights are needed if the increasing problems of falls are to be addressed.

DESIGN: Synthesis of the qualitative literature employing Noblit and Hare's method of reciprocal translation. CINAHL, Medline, EMBASE, PsychINFO and BNI were searched 1999-2015.

METHODS: Noblit and Hare's method of reciprocal translations was used to conceive this meta-ethnographic synthesis. The ENTREQ statement was employed as a tool for reporting the synthesis of qualitative research. The PRISMA statement was used for reporting the different phase of the literature search, and the Critical Appraisal Skills Programme qualitative research checklist was used as an appraisal framework.

RESULTS: Eleven papers fit the inclusion criteria and revealed a series of themes. These were falls as a threat to personal identity, falls as a threat to independence, falls as a threat to social interaction and carefulness as a protective strategy.

CONCLUSION: Many older people reject the label of "at risk of falling" because of the perceived implication of dependency and incompetence. To be considered "at risk" of falling is perceived as threatening the identity of individuals who are comfortable maintaining their own independence. However, there are also those who accept the risk of falling and in doing so choose carefulness as a personal strategy to manage the risk. For the majority of older people, maintaining independence is the key motivator influencing their actions. Independence to pursue social interaction safeguards against loss of identity, social isolation and negative feelings of dependency. Falling in the community is a problem that persists, despite intervention of local health teams. This article contributes to a body of evidence on older people's experience of falling in the community with the aim of providing new insights for nurses as they approach the issues with patients.

IMPLICATIONS FOR PRACTICE: Management of falls risk improves through constructive, proactive health behaviour. Promoting a positive attitude towards living well encourages older people to engage in healthy, risk reducing behaviours. Older people reject the designation of "at risk of falling" due to a perceived association with dependency and incompetence. The negative association is a barrier to engaging at-risk populations with fall prevention interventions.

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Perspectives of older people about contingency planning for falls in the community: a qualitative meta-synthesis

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DOI 10.1371/journal.pone.0177510 **PMID** 28562596

Abstract

OBJECTIVE: Despite consistent evidence for the positive impact of contingency planning for falls in older people, implementation of plans often fail. This is likely due to lack of recognition and knowledge about perspectives of older people about contingency planning. The objective of this research was to explore the perspectives of older people living in the community about use of contingency planning for getting help quickly after a fall.

METHOD: A systematic literature search seeking qualitative research was conducted in April 2014, with no limit placed on date of publication. Medline, EMBASE, Ageline, CINAHL, HealthSource-Nursing/Academic Edition, AMED and Psych INFO databases were searched. Three main concepts were explored and linked using Boolean operators; older people, falls and contingency planning. The search was updated until February 2016 with no new articles found. After removal of duplicates, 562 articles were assessed against inclusion and exclusion criteria resulting in six studies for the meta-synthesis. These studies were critically appraised using the McMaster critical appraisal tool. Bespoke data extraction sheets were developed and a meta-synthesis approach was adopted to extract and synthesise findings.

FINDINGS: Three themes of 'a mix of attitudes', 'careful deliberations' and 'a source of anxiety' were established. Perspectives of older people were on a continuum between regarding contingency plans as necessary and not necessary. Levels of engagement with the contingency planning process seemed associated with acceptance of their risk of falling and their familiarity with available contingency planning strategies.

CONCLUSION: Avoiding a long lie on the floor following a fall is imperative for older people in the community but there is a lack of knowledge about contingency planning for falls. This meta-synthesis provides new insights into this area of health service delivery and highlights that implementation of plans needs to be directed by the older people rather than the health professionals.

PDF Y Endnote Y

Relationship between the use of benzodiazepines and falls in older adults: a systematic review

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Maturitas 2017; 101: 17-22.

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Abstract

Falls in the elderly represent a major health problem. The etiology of falls is usually multifactorial. Special attention should be paid on benzodiazepines (BZDs) since they are widely used by older adults. A literature search of the PUBMED and EMBASE databases from January 2007 to February 2017 was conducted using the MeSH terms "benzodiazepines", "elderly" and "falls" or "accidental falls". The systematic review was performed according to PRISMA criteria. Of the 27 references selected for full reading from 235 found, 15 were eliminated and 12 papers were selected for systematic review. Exposure to BZDs was associated with a higher risk of falls in older adults, which is consistent with the results reported in the literature and previous reviews and meta-analyses. BZDs increase the risk of falling when used either as monotherapy or in combined therapies. It is preferable to use short-acting BZDs, to avoid cumulative effects over time predisposing to falls. A high proportion of falls in older adults are related to the use of BZDs. They should be prescribed to older patients in accordance with current clinical guidelines and reviewed over time. BZDs should be prescribed as a short-term therapy and progressively withdrawn. Short-acting BZDs should be the treatment of choice.

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Repeated emergency medical services use by older adults: analysis of a comprehensive statewide database

Evans CS, Platts-Mills TF, Fernandez AR, Grover JM, Cabañas JG, Patel MD, Vilke GM, Brice JH. *Ann. Emerg. Med.* 2017; ePub(ePub): ePub.

Affiliation: Department of Emergency Medicine, University of North Carolina, Chapel Hill, NC. (Copyright © 2017, American College of Emergency Physicians, Publisher Elsevier Publishing)

DOI 10.1016/j.annemergmed.2017.03.058 **PMID** 28559037

Abstract

STUDY OBJECTIVE: The objective of this study is to characterize repeated emergency medical services (EMS) transports among older adults across a large and socioeconomically diverse region. **METHODS:** Using the North Carolina Prehospital Medical Information System, we analyzed the frequency of repeated EMS transports within 30 days of an index EMS transport among adults aged 65 years and older from 2010 to 2015. We used multivariable logistic regressions to determine characteristics associated with repeated EMS transport. **RESULTS:** During the 6-year period, EMS performed 1,711,669 transports for 689,664 unique older adults in North Carolina. Of these, 303,099 transports (17.7%) were followed by another transport of the same patient within 30 days. The key characteristics associated with an increased adjusted

odds ratio of repeated transport within 30 days include transport from an institutionalized setting (odds ratio [OR] 1.42; 95% confidence interval [CI] 1.38 to 1.47), blacks compared with whites (OR 1.29; 95% CI 1.24 to 1.33), a dispatch complaint of psychiatric problems (OR 1.38; 95% CI 1.25 to 1.52), back pain (OR 1.35; 95% CI 1.26 to 1.45), breathing problems (OR 1.21; 95% CI 1.15 to 1.30), and diabetic problems (OR 1.14; 95% CI 1.06 to 1.22). Falls accounted for 15.6% of all transports and had a modest association with repeated transports (OR 1.07; 95% CI 1.00 to 1.14).

CONCLUSION: More than 1 in 6 EMS transports of older adults in North Carolina are followed by a repeated transport of the same patient within 30 days. Patient characteristics and chief complaints may identify increased risk for repeated transport and suggest the potential for targeted interventions to improve outcomes and manage EMS use.

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Risk factors associated with falls in older adults with dementia: a systematic review

Fernando E, Fraser M, Hendriksen J, Kim CH, Muir-Hunter SW.

Physiother. Can. 2017; 69(2): 161-170.

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(Copyright © 2017, B C Decker)

DOI 10.3138/ptc.2016-14 **PMID** 28539696 **PMCID** PMC5435396

Abstract

PURPOSE: People with dementia fall more often than cognitively healthy older adults, but their risk factors are not well understood. A review is needed to determine a fall risk profile for this population. The objective was to critically evaluate the literature and identify the factors associated with fall risk in older adults with dementia.

METHODS: Articles published between January 1988 and October 2014 in EMBASE, PubMed, PsycINFO, and CINAHL were searched. Inclusion criteria were participants aged 55 years or older with dementia or cognitive impairment, prospective cohort design, detailed fall definition, falls as the primary outcome, and multi-variable regression analysis. Two authors independently reviewed and extracted data on study characteristics, quality assessment, and outcomes. Adjusted risk estimates were extracted from the articles.

RESULTS: A total of 17 studies met the inclusion criteria. Risk factors were categorized into demographic, balance, gait, vision, functional status, medications, psychosocial, severity of dementia, and other. Risk factors varied with living setting and were not consistent across all studies within a setting.

CONCLUSION: Falls in older adults with dementia are associated with multiple intrinsic and extrinsic risk factors, some shared with older adults in general and others unique to the disease. Risk factors vary between community- and institution-dwelling samples of adults with dementia or cognitive impairment.

PDF Endnote Y

Risk of falls in the rheumatic patient at geriatric age

Prusinowska A, Komorowski A, Sadura-Sieklucka T, Książopolska-Orłowska K.
Reumatologia 2017; 55(2): 88-93.

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DOI 10.5114/reum.2017.67604 **PMID** 28539681 **PMCID** PMC5442300

Abstract

Evaluating the risk of falling of a geriatric rheumatic patient plays an essential role not only in planning and carrying out the physiotherapeutic process. The consequences of falls may be different and, although they do not always result in serious repercussions such as fractures or injuries, it is sufficient that they generate the fear of falling and cause a significant reduction in physical activity. Assessing functional capacity to define the risk of falling is of utmost importance in the case of patients after joint arthroplasty surgeries. The specificity of rheumatic patient's falls is determined by numerous factors. It is not always possible to avoid them. However, it becomes vital to include fall prevention in the rehabilitation process as well as to prepare the house for the needs of an elderly person so that they are safe and as self-dependent as possible.

PDF Y Endnote Y**The association between depression and traumatic brain injury in older adults: a nested matched case control study**

McGuire C, Kristman VL, Martin L, Bedard M.

J. Aging Health 2017; ePub(ePub): ePub.

Affiliation: St. Joseph's Care Group, Thunder Bay, Ontario, Canada.

(Copyright © 2017, Sage Publications)

DOI 10.1177/0898264317708072 **PMID**28553826

Abstract

OBJECTIVE: Determine association between depression and traumatic brain injury (TBI) in the older adult home care population of Ontario, Canada (2003-2013).

METHOD: A nested matched case control study was used, and data were retrieved for service users 65 years or older who received home care between 2003 and 2013. Incident TBI cases were matched to four controls by sex, age, and assessment date. Odds ratios and multivariable conditional logistic regression were completed.

RESULTS: 554,313 service users were included of which 5,215 (0.9%) had a TBI and 39,048 (7.0%) had depression. Fall history was an effect modifier. The association between depression and TBI was 1.10 (95% confidence interval [CI] = [0.93, 1.31]) for those without a history of falling, while for those with a history of falling it was 1.24 (95% CI = [1.03, 1.48]) after adjusting for education and Alzheimer's disease.

DISCUSSION: Depression is associated with sustaining a TBI in those with a history of falling.

PDF Y Endnote Y**The association between excessive daytime sleepiness and gait parameters in community-dwelling older adults**

Nakakubo S, Doi T, Shimada H, Ono R, Makizako H, Tsutsumimoto K, Hotta R, Suzuki T.

J. Aging Health 2016; ePub(ePub): ePub.

Affiliation: J.F. Oberlin University, Tokyo, Japan.

(Copyright © 2016, Sage Publications)

DOI 10.1177/0898264316673253 **PMID**28553784

Abstract

OBJECTIVE: This study examined the association between excessive daytime sleepiness (EDS) and gait characteristics (e.g., speed, variability) in community-dwelling older adults.

METHOD: This cross-sectional study included 3,901 individuals aged ≥ 65 years. Participants answered questions about EDS, sleep duration, and other sleep-related symptoms. Gait speed, stride length, and the variability in stride length were assessed by using a stopwatch and a WalkWay device.

RESULTS: EDS was significantly associated with slower gait speed among younger subjects (< 75 years, $p = .021$) and with both slower gait speed ($p = .045$) and greater variability in stride length among older subjects (≥ 75 years, $p = .048$) in a multivariate analysis adjusted for age, sex, body mass index, medication, number of comorbidities, and education.

DISCUSSION: EDS associates with gait ability, particularly in older old adults. Further prospective studies are needed to determine the causal association between gait ability and sleep disturbances, including EDS.

PDF Y Endnote Y

The association between whole body sagittal balance and risk of falls among elderly patients seeking treatment for back pain

Kim J, Hwang JY, Oh JK, Park MS, Kim SW, Chang H, Kim TH.

Bone Joint Res. 2017; 6(5): 337-344.

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(Copyright © 2017, British Editorial Society of Bone and Joint Surgery)

DOI 10.1302/2046-3758.65.BJR-2016-0271.R2 **PMID** 28536117

Abstract

OBJECTIVES: The objective of this study was to assess the association between whole body sagittal balance and risk of falls in elderly patients who have sought treatment for back pain. Balanced spinal sagittal alignment is known to be important for the prevention of falls. However, spinal sagittal imbalance can be markedly compensated by the lower extremities, and whole body sagittal balance including the lower extremities should be assessed to evaluate actual imbalances related to falls.

METHODS: Patients over 70 years old who visited an outpatient clinic for back pain treatment and underwent a standing whole-body radiograph were enrolled. Falls were prospectively assessed for 12 months using a monthly fall diary, and patients were divided into fallers and non-fallers according to the history of falls. Radiological parameters from whole-body radiographs and clinical data were compared between the two groups.

RESULTS: A total of 144 patients (120 female patients and 24 male patients) completed a 12-month follow-up for assessing falls. A total of 31 patients (21.5%) reported at least one fall within the 12-month follow-up. In univariate logistic regression analysis, the risk of falls was significantly increased in older patients and those with more medical comorbidities, decreased lumbar lordosis, increased sagittal vertical axis, and increased horizontal distance between the C7 plumb line and the centre of the ankle (C7A). Increased C7A was significantly associated with increased risk of falls even after

multivariate adjustment.

CONCLUSION: Whole body sagittal balance, measured by the horizontal distance between the C7 plumb line and the centre of the ankle, was significantly associated with risk of falls among elderly patients with back pain. Cite this article: J. Kim, J. Y. Hwang, J. K. Oh, M. S. Park, S. W. Kim, H. Chang, T-H. Kim. The association between whole body sagittal balance and risk of falls among elderly patients seeking treatment for back pain. *Bone Joint Res* 2017;6:-344. DOI: 10.1302/2046-3758.65.BJR-2016-0271.R2.

PDF Y Endnote Y

The complex association between fear of falling and mobility limitation in relation to late-life falls: a share-based analysis

Litwin H, Erlich B, Dunsky A.

J. Aging Health 2017; ePub(ePub): ePub.

Affiliation: The Zinman College of Physical Education and Sport Sciences, Wingate Institute, Israel. (Copyright © 2017, Sage Publications)

DOI 10.1177/0898264317704096 **PMID**28553817

Abstract

OBJECTIVE: This study examines fear of falling (FOF) in relation to falls in light of mobility limitation.

METHOD: Data on community-dwelling older Europeans, aged 65+, were drawn from two consecutive waves of the Survey of Health, Ageing and Retirement in Europe (SHARE). The analysis regressed fall status in 2013 on reported FOF 2 to 3 years earlier, controlling for previous falls.

RESULTS: FOF predicted subsequent falls when mobility limitation was low to moderate. However, the effect of FOF on fall probability was reversed when mobility limitation was high.

DISCUSSION: The analysis underscores a complex association between FOF and mobility limitation in relation to late-life falls. People who are worried about falling tend to fall more. Those having high mobility limitation but lacking FOF are also more likely to fall. In cases of considerable mobility limitation, FOF may act as a protective buffer. The less worried in this group, however, may be subject to greater falling, and thus require greater attention.

PDF Y Endnote Y

Understanding the connection between cognitive impairment and mobility: what can be gained from neuropsychological assessment?

Pavol MA, Stein J, Kabir FM, Yip J, Sorkin LY, Marshall RS, Lazar RM.

Rehabil. Res. Pract. 2017; 2017: e4516219.

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(Copyright © 2017, Hindawi Publishing)

DOI 10.1155/2017/4516219 **PMID** 28536658 **PMCID** PMC5425833

Abstract

The ability of neuropsychological tests to predict rehabilitation outcome is unclear, particularly when other ratings of cognition are available. Neuropsychological test scores and functional ratings of cognition (Functional Independence Measure (FIM) Cognition score) were used to predict improvement in patient mobility and self-care skill, as measured by the FIM Motor score. Regression models used both raw neuropsychology test scores and age-adjusted scores. Retrospective chart review was performed for patients on an inpatient rehabilitation unit and referred for

neuropsychological assessment. The group included 126 subjects (average age 64.2 ± 17.1 years) and a variety of medical diagnoses. Neuropsychological tests included the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). After forcing the Admission FIM Cognition score into the model, RBANS scores and duration of rehabilitation predicted FIM Motor improvements ($F = 11.42, p < 0.0001$). Raw neuropsychological test scores performed better than the model with age-adjusted test scores. FIM Cognition alone did not predict FIM Motor improvements. Neuropsychological tests, combined with duration of rehabilitation, predicted mobility gains for patients undergoing inpatient rehabilitation beyond what was predicted by another, readily available, assessment of cognition. Neuropsychology raw scores performed better than age-adjusted scores, raising questions about the standard use of demographic adjustments for predicting real-world function.

PDF Y Endnote Y

Wearables for independent living in older adults: gait and falls

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Maturitas 2017; 100: 16-26.

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DOI 10.1016/j.maturitas.2017.03.317 **PMID** 28539173

Abstract

Solutions are needed to satisfy care demands of older adults to live independently. Wearable technology (wearables) is one approach that offers a viable means for ubiquitous, sustainable and scalable monitoring of the health of older adults in habitual free-living environments. Gait has been presented as a relevant (bio)marker in ageing and pathological studies, with objective assessment achievable by inertial-based wearables. Commercial wearables have struggled to provide accurate analytics and have been limited by non-clinically oriented gait outcomes. Moreover, some research-grade wearables also fail to provide transparent functionality due to limitations in proprietary software. Innovation within this field is often sporadic, with large heterogeneity of wearable types and algorithms for gait outcomes leading to a lack of pragmatic use. This review provides a summary of the recent literature on gait assessment through the use of wearables, focusing on the need for an algorithm fusion approach to measurement, culminating in the ability to better detect and classify falls. A brief presentation of wearables in one pathological group is presented, identifying appropriate work for researchers in other cohorts to utilise. Suggestions for how this domain needs to progress are also summarised.

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What does the Cochrane Collaboration say about interventions for falls prevention?

Physiother. Can. 2017; 69(2): e186.

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DOI 10.3138/ptc.69.2.cochrane **PMID** 28539699 **PMCID** PMC5435401

Abstract [Abstract unavailable]

PDF Endnote Y

Advantages and problems of nonlinear methods applied to analyze physiological time signals: human balance control as an example

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Sci. Rep. 2017; 7(1): e2464.

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DOI 10.1038/s41598-017-02665-5 **PMID** 28550294

Abstract

Physiological processes are regulated by nonlinear dynamical systems. Various nonlinear measures have frequently been used for characterizing the complexity of fractal time signals to detect system features that cannot be derived from linear analyses. We analysed human balance dynamics ranging from simple standing to balancing on one foot with closed eyes to study the inherent methodological problems when applying fractal dimension analysis to real-world signals. Higuchi dimension was used as an example. Choice of measurement and analysis parameters has a distinct influence on the computed dimension. Noise increases the fractional dimension which may be misinterpreted as a higher complexity of the signal. Publications without specifying the parameter setting, or without analysing the noise-sensitivity are not comparable to findings of others and therefore of limited scientific value.

PDF Y Endnote Y

Controlled clinical trial exploring the impact of a brief intervention for prevention of falls in an emergency department

Harper KJ, Barton AD, Arendts G, Edwards DG, Petta AC, Celenza A.

Emerg. Med. Australas. 2017; ePub(ePub): ePub.

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(Copyright © 2017, Australasian College for Emergency Medicine and Australasian Society for Emergency Medicine, Publisher John Wiley and Sons)

DOI 10.1111/1742-6723.12804 **PMID** 28544279

Abstract

OBJECTIVE: To establish the effectiveness of a brief intervention to prevent falls in older patients presenting to the ED post-discharge.

METHODS: The present study is a prospective single-centre, quasi-randomised controlled clinical trial of a brief targeted educational intervention to prevent falls. The intervention group received brief scripted education and were advised of their percentage probability of falling in the next 6 months. The key message was to reinforce the importance of falls prevention strategies and the seriousness of falls.

RESULTS: A total of 412 over 65 years old were recruited; 63 (32.1%) patients in the intervention group and 67 (36.8%) in the control group reported falls in the 6 month follow up period (OR 0.81, 95% confidence interval [CI] 0.53-1.25, $P = 0.34$). No significant differences were noted for mortalities ($P = 0.54$), ED representations ($P = 0.15$) and medication changes ($P = 0.17$). Patients receiving intervention had less hospital admissions ($P = 0.002$) after adjustment for confounding

variables. Intervention patients who presented with a fall had significant ($P = 0.007$) improvement in function at 6 months, whereas those not presenting with a fall experienced functional decline.
CONCLUSION: A brief intervention was associated with maintenance of function in fallers and reduced hospital admissions, without preventing falls post-discharge.

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Is the association between hip fractures and seasonality modified by influenza vaccination? An ecological study

Fraenkel M, Yitshak-Sade M, Beacher L, Carmeli M, Mandelboim M, Siris E, Novack V.
Osteoporos. Int. 2017; ePub(ePub): ePub.

Affiliation: Clinical Research Center, Soroka University Medical Center, Beersheba, Israel.
(Copyright © 2017, Springer Science+Business Media)

DOI 10.1007/s00198-017-4077-1 **PMID** 28536736

Abstract

Osteoporotic hip fractures in 4344 patients were more common during winter. Lower temperatures were associated with higher rates of fracture only in those not vaccinated for influenza. Influenza outbreaks increased the risk of hip fractures. Further studies are needed to assess whether influenza vaccination can prevent hip fractures.

INTRODUCTION: Winter seasonality of osteoporotic hip fracture incidence has been demonstrated, yet the explanation for the association is lacking. We hypothesize that the seasonality of osteoporotic hip fracture can be explained by an association between hip fractures and seasonal influenza outbreaks.

METHODS: This retrospective cohort study included all patients admitted to Soroka University Medical Center with a diagnosis of osteoporotic hip fracture (ICD-9 code 820) between the years 2001 and 2013. Patients with malignancies, trauma, and age under 50 were excluded. In a time series analysis, we examined the association between hip fracture incidence and seasonality adjusted for meteorological factors, and population rates of influenza infection and vaccination using Poisson models.

RESULTS: Four thousand three hundred forty-four patients with a hip fracture were included (69% females, mean age 78). Daily fracture rates were significantly higher in winter (1.1 fractures/day) compared to summer, fall, and spring (0.79, 0.90, and 0.91; $p < 0.001$). In analysis adjusted for seasons and spline function of time, temperatures were associated with hip fractures risk only in those not vaccinated for influenza ($n = 2939$, for every decrease of 5 °C, RR 1.08, CI 1.02-1.16; $p < 0.05$). In subgroup analysis during the years with weekly data on national influenza rates (2010-2013), the risk for hip fracture, adjusted for seasons and temperature, was 1.26 2 weeks following a week with high infection burden (CI 1.05;1.51 $p = 0.01$), while the temperature was not significantly associated with the fracture risk.

CONCLUSIONS: Under dry and warm desert climate, winter hip fracture incidence increase might be associated with influenza infection, and this effect can be negated by influenza vaccination.

PDF Y Endnote Y

Time distribution of injury-related in-hospital mortality in a trauma referral center in South of Iran (2010-2015)

Abbasi H, Bolandparvaz S, Yadollahi M, Anvar M, Farahgol Z.

Medicine (Baltimore) 2017; 96(21): e6871.

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(Copyright © 2017, Lippincott Williams and Wilkins)

DOI 10.1097/MD.00000000000006871 **PMID** 28538377

Abstract

In Iran, there are no studies addressing trauma death timing and factors affecting time of death after injuries. This study aimed to examine time distribution of trauma deaths in an urban major trauma referral center with respect to victims' injury characteristics during 2010 to 2015. This was a cross-sectional study of adult trauma-related in-hospital deaths resulting from traffic-related accidents, falls, and violence-related injuries. Information on injury characteristics and time interval between admission and death was extracted from 3 hospital databases. Mortality time distribution was analyzed separately in the context of each baseline variable. A total of 1117 in-hospital deaths (mean age 47.6 ± 22.2 years, 80% male) were studied. Deaths timing followed an extremely positive skewed bimodal distribution with 1 peak during the first 24 hours of admission (41.6% of deaths) and another peak starting from the 7th day of hospitalization to the end of first month (27.7% of total). Subjects older than 65 years were more likely to die after 24 hours compared to younger deceased ($P = .031$). More than 70% of firearm-related deaths and 48% of assault-related mortalities occurred early, whereas 67% and 66% of deaths from falls and motorcycle accidents occurred late ($P < .001$). Over 57% of deaths from severe thoracic injuries occurred early, whereas this value was only 37% for central nervous system injuries ($P < .001$). From 2010 to 2015, percentage of late deaths decreased significantly from 68% to 54% ($P < .001$). Considering 1 prehospital peak of mortality and 2 in-hospital peaks, mortality time distribution follows the old trimodal pattern in Shiraz. This distribution is affected by victims' age, injury mechanism, and injured body area. Although such distribution reflects a relatively lower quality of care comparing to mature trauma systems, a change toward expected bimodal pattern has started.

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