Home environmental factors associated with falls among elderly in Ubon Ratchathani, Thailand

Boonkhao L, Puangjan K, Ouengprasert I, Laosupap K, Bootsorn A, Junsiri S, Thongdamrongtham S, Chaikhan S, Pramaya P, Rattanachaikunsopon P. J. Multidiscip. Healthc. 2024; 17: 1363-1373.

Abstract

PURPOSE: The demographics of the world's population have changed over time. Previous research demonstrated the high rate of falls among elderly people living in rural areas in their own houses. This study aimed to use the Thai-Home Fall Hazard Assessment Tool (Thai-HFHAT) to look into the environmental factors inside and outside of residential homes connected to falls among elderly living in rural Thailand.

METHODS: Data was gathered between August and October 2023 using a questionnaire to obtain demographic data and the 44-question Thai-HFHAT survey. The survey was divided into seven sections covering the areas inside and outside the elderly home facility. Descriptive statistics were used in the data analysis, and statistical tests, including Fisher's exact test and the Chi-square test, were used to examine the relationship between environmental factors and falls in elderly people.

RESULTS: The study found that issues with an elderly rural home included split-level flooring in the living room, bathroom, and bedroom, an insecurely attached carpet in the kitchen and bedroom, and a shower area not separated from the toilet. The environmental factors linked to falls among the elderly encompass insufficient lighting in the living room, bathroom, bedroom, and parking garage, debris and obstacles such as wires along the path in the living room and parking garage, and the poor condition of the staircase, characterized by inconsistent step heights or a slippery surface.

CONCLUSION: Community agencies should consider the living conditions of elderly people in rural areas to effectively reduce the occurrence of falls among this population.

Rib fractures and frailty in geriatric trauma patients

Abstract

As rib fractures are a common injury in the geriatric trauma population and can result in increased morbidity and mortality, we sought to understand predicting outcomes in this population. We hypothesized that frail geriatric rib fracture patients would have worse outcomes than their non-frail counterparts. This single-center retrospective study includes patients from July 2019 to June 2022 who were ≥65 years-old, had ≥ 2 rib fractures, and a documented Clinical Frailty Scale score. Univariate analysis was conducted comparing frail vs non-frail, and ≤3 rib fractures vs >3 rib fractures. Multivariate logistic regressions for risk of mortality and of frailty were performed. We found higher mortality in patients with >3 rib fractures on univariate analysis; however, this did not hold true on multivariate analysis. Frail patients were less likely discharged home and had a lower functional status at discharge. Further investigation is needed to effectively improve outcomes for geriatric trauma patients with rib fractures.

Biomechanical balance measures during timed up and go test improve prediction of prospective falls in older adults

Abstract

OBJECTIVE: To assess the feasibility of using biomechanical gait balance measures, the frontal and sagittal plane center of mass (COM)-Ankle angles, to prospectively predict recurrent falls in community-dwelling older adults.

DESIGN: A cohort study with a one-year longitudinal follow-up. Logistic regression was used to test the ability of the COM-Ankle angles to predict prospective falls. SETTING: General community PARTICIPANTS: : Sixty older adults over the age of 70 years were recruited using a volunteer sample. INTERVENTIONS: Not applicable. MAIN OUTCOME MEASURE(S): Biomechanical balance parameters: the sagittal and frontal plane COM-Ankle angles during the sit-to-walk and turning phases of the Timed Up and Go test. The COM-Ankle angles are the inclination angles of the line formed by the COM and lateral ankle (malleolus) marker of the stance foot in the sagittal and frontal planes. We also included the following clinical balance tests in the analysis: Activity-Specific Balance Confidence, Berg Balance Scale, Fullerton Advanced Balance scale, and Timed Up and Go test. Their abilities to predict falls served as a reference for the biomechanical balance parameters.

RESULTS: When the biomechanical gait balance measures were added to all the confounders, the explained variance was increased from 25.3% to 50.2%. Older adults who have a smaller sagittal plane COM-Ankle angle at seat-off, a greater frontal plane COM range of motion during STW and a smaller frontal plane angle during turning were more likely to become recurrent fallers.

CONCLUSION(S): Our results indicated that dynamic biomechanical balance parameters could provide valuable information about a participant's future fall risks beyond what can be explained by demographics, cognition, depression, strength, and past fall history. Among all biomechanical parameters investigated, frontal plane COM motion measures during STW and turning appear to be the most significant predictors for future falls.

A systems approach to assist policy action to prevent falls among community-dwelling older people in Australia

Abstract

OBJECTIVES: While systems thinking has gained recognition as an important approach in health policy and prevention research, its application in the context of fall prevention among community-dwelling older adults has been underutilised. Here, we build on the guiding principles of the systemic lens component of the Prevention System Change Framework to assess and identify potential changes that are required to facilitate policy action in the field of falls prevention.

METHODS: We conducted a desktop search to identify policy documents encompassing falls prevention among community-dwelling older adults in Australia. Documents were considered eligible if they were published in the last 10 years and were authored or endorsed by federal or state government bodies. We collaboratively examined eligible documents to gain insights into the current policy landscape in falls prevention and to illustrate opportunities for action and the potential for strengthening partnerships.

RESULTS: There is no current national policy on preventing falls in older adults in Australia. While we identified eight policy documents, none focused exclusively on falls prevention, indicating that falls are currently not perceived as a public health issue that warrants a dedicated policy framework. We identified a need for a comprehensive national policy that draws upon insights from various disciplines, suggests intersectoral collaboration, addresses health inequities and involves meaningful engagement with key stakeholders. Future falls prevention policies may benefit from clear governance structures and specific targets, along with mechanisms for monitoring and evaluating outcomes.

CONCLUSION: Falls prevention is a pressing public health concern that requires dedicated policy resources. Adopting a systems-oriented approach can help reduce falls and their associated burdens on individuals and the healthcare system. Acknowledging the urgency and complexity of this challenge is a first, essential step toward crafting a comprehensive national falls prevention policy.

Language: en

Influence of lower limb isokinetic muscle strength and power on the occurrence of falls in community-dwelling older adults: a longitudinal study

Abstract

INTRODUCTION: Previous studies have highlighted the association between lower limb muscle strength and falls in older adults. However, a comprehensive understanding of the specific influence of each lower limb muscle group on fall occurrences remains lacking.

OBJECTIVE: This study aimed to investigate the impact of knee, ankle, and hip muscle strength and power on falls in older adults, with the goal of identifying which muscle groups are more predictive of fall risk in this population.

METHODS: This longitudinal observational study enrolled 94 community-dwelling older adults. Muscle strength and power of the ankle's plantiflexors and dorsiflexors, knee flexors and extensors, and hip flexors, extensors, adductors, and abductors were assessed using a Biodex System 4 Pro® isokinetic dynamometer. Fall occurrences were monitored through monthly telephone contact over a year.

RESULTS: Participants, with a median age of 69 years (range 64-74), included 67% women, and 63.8% reported a sedentary lifestyle. Among them, 45,7% of older adults were classified as fallers. Comparative analyses revealed that non-fallers displayed significantly superior isokinetic muscle strength in the hip abductors and adductors, along with higher muscle power in the hip abductors, hip flexors, and knee flexors compared to fallers. Multivariate logistic regression analysis indicated that a 1 Nm/Kg increase in hip abductor strength reduced the chance of a fall by 86.3%, and a 1 Watt increase in hip flexor power reduced the chance of a fall by 3.6%.

CONCLUSION: The findings indicate that hip abductor strength and hip flexor power can be considered protective factors against falls in independent older adults in the community. These findings may contribute to developing effective fall-prevention strategies for this population.

Language: en

Validation of a rule-based ICD-10-CM algorithm to detect fall injuries in Medicare data

Ganz DA, Esserman D, Latham NK, Kane M, Min LC, Gill TM, Reuben DB, Peduzzi P, Greene EJ. J. Gerontol. A Biol. Sci. Med. Sci. 2024; ePub(ePub): ePub.

Abstract

BACKGROUND: Diagnosis-code-based algorithms to identify fall injuries in Medicare data are useful for ascertaining outcomes in interventional and observational studies. However, these algorithms have not been validated against a fully external reference standard, in ICD-10-CM, or in Medicare Advantage (MA) data.

METHODS: We linked self-reported fall injuries leading to medical attention (FIMA) from the Strategies to Reduce Injuries and Develop Confidence in Elders (STRIDE) trial (reference standard) to Medicare fee-for-service (FFS) and MA data from 2015-2019. We measured the area under the receiver operating characteristic curve (AUC) based on sensitivity and specificity of a diagnosis-code-based algorithm against the reference standard for presence or absence of ≥1 FIMA within a specified window of dates, varying the window size to obtain points on the curve. We stratified results by source (FFS versus MA), trial arm (intervention versus control), and STRIDE's ten participating healthcare systems.

RESULTS: Both reference standard data and Medicare data were available for 4941 (of 5451) participants. The reference standard and algorithm identified 2054 and 2067 FIMA, respectively. The algorithm had 45% sensitivity (95% confidence interval [CI], 43%-47%) and 99% specificity (95% CI, 99%-99%) to identify reference standard FIMA within the same calendar month. The AUC was 0.79 (95% CI, 0.78-0.81) and was similar by FFS or MA data source or trial arm, but showed variation among STRIDE healthcare systems (AUC range by healthcare system, 0.71 to 0.84).

CONCLUSIONS: An ICD-10-CM algorithm to identify fall injuries demonstrated acceptable performance against an external reference standard, in both MA and FFS data.

Partially supervised exercise programmes for fall prevention improve physical performance of older people at risk of falling: a three-armed multi-centre randomised controlled trial

Hager AGM, Mathieu N, Carrard S, Bridel A, Wapp C, Hilfiker R. BMC Geriatr. 2024; 24(1): e311.

Abstract

BACKGROUND: Falls have a major impact on individual patients, their relatives, the healthcare system and related costs. Physical exercise programmes that include multiple categories of exercise effectively reduce the rate of falls and risk of falling among older adults.

METHODS: This 12-month, assessor-blinded, three-armed multicentre randomised clinical trial was conducted in adults aged ≥ 65 years identified as at risk of falling. Four hundred and five participants were randomly allocated into 3 groups: experimental group (n = 166) with the Test&Exercise partially supervised programme based on empowerment delivered with a tablet, illustrated manual and cards, reference group (n = 158) with the Otago partially supervised programme prescribed by a physiotherapist delivered with an illustrated manual and control group (n = 81) with the Helsana self-administrated programme delivered with cards. Experimental and reference groups received partially supervised programmes with 8 home sessions over 6 months. Control group received a self-administered program with a unique home session. The 3 groups were requested to train independently 3 times a week for 12 months. Primary outcome was the incidence rate ratio of self-reported falls over 12 months. Secondary outcomes were fear of falling, basic functional mobility and balance, quality of life, and exercise adherence.

RESULTS: A total of 141 falls occurred in the experimental group, 199 in the reference group, and 42 in the control group. Incidence rate ratios were 0.74 (95% CI 0.49 to 1.12) for the experimental group and 0.43 (95% CI 0.25 to 0.75) for the control group compared with the reference group. The Short Physical Performance Battery scores improved significantly in the experimental group (95% CI 0.05 to 0.86; P = 0.027) and in the reference group (95% CI 0.06 to 0.86; P = 0.024) compared with the control group.

CONCLUSION: The self-administered home-based exercise programme showed the lowest fall incidence rate, but also the highest dropout rate of participants at high risk of falling. Both partially supervised programmes resulted in statistically significant improvements in physical performance compared with the self-administered programme. TRIAL REGISTRATION: NCT02926105. CLINICALTRIALS: gov. Date of registration: 06/10/2016.

Language: en

Association between the severity of neurocognitive disorders and the seriousness of falls in the elderly

Vernacular Title

Association entre la sévérité des troubles neurocognitifs et la gravité des chutes chez les personnes âgées

Abstract

Falls cause severe morbidity and mortality in people over 65 years old in all countries. Cognitive frailty is considered to be one of the risk factors for falls in the elderly. Approximately 60% of the elderly with neurocognitive disorders fall annually and this is two times more compared to elderly with no cognitive impairment. We already know that neurocognitive disorders and their severity are a risk factor for falls in older people. Few studies are conducted to investigate the association between the severity of neurocognitive disorders and the severity of falls. This study is therefore interested in investigating the association between the severity of neurocognitive disorders and the serious falls in the elderly. This is a non-interventional retrospective study of 100 patients admitted for fall in a geriatric hospital. The correlation between MMSE and fall severity remains uncertain. Serious falls are more frequent in patients with Parkinsonian syndromes, but this result is not statically significant. Polypharmacy remains very prevalent in our population with 70 % of patients having more than four drugs. Polydrug use in our study was very high, with 70% of patients taking more than four medications. We did not find a statistically significant association between the severity of neurocognitive disorders evaluated with the MMSE and the serious falls. More studies with tailored neurocognitive testing are needed to investigate the link between executive function disorders and the serious of falls.

Acceptability of two perturbation-based balance training paradigms: perturbation treadmill vs dynamic stability training in the presence of perturbations

Hezel N, Brüll L, Arampatzis A, Schwenk M. Gerontology 2024; ePub(ePub): ePub.

Abstract

INTRODUCTION: Perturbation-based balance training is promising for fall prevention in older adults mimicking real-life fall situations at a person's stability thresholds to improve reactive balance. Hence, it can be associated with anxiety, but knowledge about the acceptability of perturbation-based balance training is scarce.

METHOD: This is a secondary analysis of a randomized controlled trial comparing effects of two different perturbation-based balance training paradigms that aims to evaluate and compare the acceptability of those training paradigms in fall-prone older adults. Participants (74.9±5.7 years) who completed the training (6 weeks, 3x/week) on either a perturbation treadmill (PBTtreadmill: n=22) or unstable surfaces in the presence of perturbations (PBTstability: n=27) were surveyed on the acceptability of perturbation-based balance training using a 21-items questionnaire addressing seven domains (perceived effectiveness, tailoring, demand, safety, burden, devices, affective attitude), based on the Theoretical Framework of Acceptability and context-specific factors. Relative scores (% of absolute maximum) for single items and domains were calculated.

RESULTS: Median domain scores of perceived effectiveness, tailoring, safety, devices, and affective attitude were all ≥70% for both paradigms. The highest scores were obtained for tailoring (both paradigms=100% [interquartile range 80-100%]). Domain scores of demand and burden were in the medium range (40-45%) for both paradigms. No significant differences between paradigms were found for any domain score. Two single items of safety differed significantly, with PBTtreadmill perceived as needing less support (p=.015) and leading less often to balance loss (p=.026) than PBTstability.

CONCLUSION: Perturbation-based balance training conducted on a perturbation treadmill or on unstable surfaces is well accepted in this fall-prone older sample, even though it is conducted at individual stability thresholds. Tailoring may play a key role in achieving high levels of perceived effectiveness, appropriate levels of demand and burden, and high sense of safety. Perturbation-based balance training delivered on treadmills might be more appropriate for more anxious persons.

Language: en

The automatic activity of abdominal muscles during stable and unstable standing postural tasks in older adults with and without low back pain- a cross-sectional study

Abstract

BACKGROUND: The postural control and abdominal muscles' automatic activity were found to be impaired in subjects with low back pain (LBP) during static activities. However, the studies are predominantly conducted on younger adults and a limited number of studies have evaluated abdominal muscles' automatic activity during dynamic standing activities in subjects with LBP. The present study investigated the automatic activity of abdominal muscles during stable and unstable standing postural tasks in older adults with and without LBP.

METHODS: Twenty subjects with and 20 subjects without LBP were included. The thickness of the transversus abdominis (TrA), internal oblique (IO), and external oblique (EO) muscles was measured during rest (in supine), static, and dynamic standing postural tasks. To estimate automatic muscle activity, each muscle's thickness during a standing task was normalized to its thickness during the rest. Standing postural tasks were performed using the Biodex Balance System.

RESULTS: The mixed-model analysis of variance revealed that task dynamicity significantly affected thickness change only in the TrA muscle (P = 0.02), but the main effect for the group and the interaction were not significantly different (P > 0.05). There were no significant main effects of the group, task dynamicity, or their interaction for the IO and EO muscles (P > 0.05). During dynamic standing, only the TrA muscle in the control group showed greater thickness changes than during the static standing task (P < 0.05).

CONCLUSIONS: Standing on a dynamic level increased the automatic activity of the TrA muscle in participants without LBP compared to standing on a static level. Further research is required to investigate the effects of TrA muscle training during standing on dynamic surfaces for the treatment of older adults with LBP.

Falls and Alzheimer disease

Abstract

Falls are the leading cause of injury, disability, and injury-related mortality in the older adult population. Older adults with Alzheimer disease (AD) are over twice as likely to experience a fall compared to cognitively normal older adults. Intrinsic and extrinsic fall risk factors may influence falls during symptomatic AD; intrinsic factors include changes in cognition and impaired functional mobility, and extrinsic factors include polypharmacy and environmental fall hazards. Despite many known fall risk factors, the high prevalence of falls, and the presence of effective fall prevention interventions for older adults without cognitive impairment, effective fall prevention interventions for older adults with AD to date are limited and inconclusive. Falls may precede AD-related cognitive impairment during the preclinical phase of AD, though a narrow understanding of fall risk factors and fall prevention interventions for older adults with preclinical AD limits clinical treatment of falls among cognitively normal older adults with preclinical AD. This mini review explores fall risk factors in symptomatic AD, evidence for effective fall prevention interventions in symptomatic AD, and preclinical AD as an avenue for future falls research, including recommendations for future research directions to improve our understanding of falls and fall risk during preclinical AD. Early detection and tailored interventions to address these functional changes are needed to reduce the risk of falls for those at risk for developing AD. Concerted efforts should be dedicated to understanding falls to inform precision fall prevention strategies for this population.

Benign prostatic hyperplasia and the risk of falls in older men: insights from a population-based study on geriatric morbid conditions

Kim SJ, Lee D, Park SG, Pak S, Lee YG, Cho ST. Int. Neurourol. J. 2024; 28(1): 44-51.

Abstract

PURPOSE: The purpose of this study was to explore the association between benign prostatic hyperplasia (BPH) and the incidence of falls from the perspective of geriatric morbid conditions.

METHODS: Data were sourced from the triennial National Survey of Older Koreans conducted by the Ministry of Health and Welfare (2017-2020). In total, 8,135 male participants aged 65 and older were included, and information was gathered through questionnaires and physical measurements. Logistic regression analysis was utilized to determine the impact of BPH on the risk of falls, and subgroup analyses were conducted to examine the influence of BPH on specific types of falls.

RESULTS: Of the participants, 15.2% (1,238 of 8,135) reported that their BPH treatment exceeded 3 months, and 8.0% (648 of 8,135) reported experiencing falls, with 61.4% (398/648) of these falls resulting in injuries. A significant association was identified between BPH and both falls (odds ratio [OR], 1.798; 95% confidence interval [CI], 1.479-2.185) and falls with injuries (OR, 2.133; 95% CI, 1.689-2.694). A subgroup analysis indicated a correlation between BPH and falls in groups having one (OR, 1.912; 95% CI, 1.356-2.694) and 2 or more conditions (OR, 1.856; 95% CI, 1.455-2.367) involving visual and auditory impairments, cognitive decline, depression, lower motor weakness, and limitations in daily activities.

CONCLUSION: The findings indicate that BPH contributes to the incidence of falls among older men, particularly those with comorbid conditions. Considering the heightened fall risk among elderly individuals suffering from multiple morbidities, particularly those with BPH, targeted interventions are essential for mitigating the risk of falls in this vulnerable group.

Comparing sensitivity, specificity, and accuracy of fall risk assessments in community-dwelling older adults

Lafontant K, Blount A, Suarez JRM, Fukuda DH, Stout JR, Trahan EM, Lighthall NR, Park JH, Xie R, Thiamwong L. Clin. Interv. Aging 2024; 19: 581-588.

Abstract

PURPOSE: The US Centers for Disease Control and Prevention (CDC) has implemented the Stopping Elderly Accidents, Deaths, and Injuries (STEADI) initiative. This initiative provides an algorithm for fall risk screening. However, the algorithm has the potential to overcategorize individuals as high risk for falling upon initial screening, which may burden clinicians with the task of recategorizing individuals after follow-up testing. Therefore, this study aimed to compare the accuracy, sensitivity, and specificity of fall risk appraisal between the STEADI, Short Fall-Efficacy Scale International (FES-I), and portable balance system (BTrackS) assessments in community-dwelling older adults.

PATIENTS AND METHODS: This cross-sectional analysis included 122 community-dwelling older adults, comprising 94 women and 28 men. Center-of-pressure postural sway was assessed using the BTrackS, fear of falling was assessed using the Short FES-I questionnaire, and all participants completed the STEADI checklist. Each assessment categorized participants as either high or low fall risk and fall risk appraisal was compared between groups using McNemar tests.

RESULTS: The STEADI checklist (high risk: n = 62; low risk: n = 60) significantly differed in fall risk appraisal compared to the BTrackS (high risk: n = 44; low risk: n = 78; p = 0.014) and the Short FES-I (high risk: n = 42; low risk: n = 80; p = 0.002). Compared to the BTrackS, the STEADI checklist had a specificity of 62.8%, sensitivity of 70.5%, and accuracy of 65.6%. Compared to the Short FES-I, the STEADI checklist had a specificity of 67.5%, sensitivity of 81.0%, and accuracy of 72.1%.

CONCLUSION: The STEADI checklist appears to overcategorize individuals as high fall risk more frequently than direct assessments of postural sway and fear of falling. Further research is needed to examine potential improvements in accuracy when combining the STEADI checklist with direct assessments of postural sway and/or fear of falling.

Enhancing knowledge, attitude, and perceptions towards fall prevention among older adults: a pharmacist-led intervention in a primary healthcare clinic, Gemas, Malaysia

Abstract

BACKGROUND: Falls and fall-related injuries are very common among older adults, and the risk of falls increases with the aging process. The lack of awareness of falls and fall-related injuries among older adults can contribute to an increasing risk of falls. Hence, a study was carried out to improve the knowledge, attitude, and perception of falls and fractures among older adults in a primary care setting in Gemas, a rural area of the Selangor state of Malaysia.

METHOD: A structured educational intervention was provided to older adults who visited the primary care setting in Gemas and provided written informed consent to participate in the study. A total of 310 older adult patients was included in the study using a convenience sampling technique.

RESULTS: Before the intervention, 74.84% of the respondents (n = 232) agreed that falls and related fractures are the leading causes of hospital admission among older adults. In post-intervention, the number of respondents who agreed with this statement increased to 257 (82.91%). At baseline, 28 respondents (9.03%) had poor knowledge, 160 respondents (51.61%) had average knowledge levels, and 122 respondents (39.35%) had good knowledge. In post-intervention, respondents with poor and average knowledge reduced to 1.93% (n = 6) and 29.35% (n = 91) respectively. A majority of respondents' knowledge levels improved significantly after the intervention (n = 213; 68.71%). About eight respondents (2.58%) had a negative perception of falls. In post-intervention, the percentage reduced to 0.65% as only two respondents had a negative perception. A total of 32 types of fall-risk-increasing drugs (FRIDs) have been prescribed to the respondents. A strong correlation (r = 0.89) between pre- and post-intervention knowledge was shown among the respondents. Paired t-test analysis showed a statistically significant difference.

CONCLUSION: The pharmacist-led educational intervention significantly improved the knowledge, attitude, and perception of falls among older adults. More structured and periodical intervention programmes are warranted to reduce the risk of falls and fractures among older adults.

Fall risk perception in older adults: a concept analysis

Nan J, Li Z, Zou X, Sun M, Gao J, Jiang Y. J. Clin. Nurs. 2024; ePub(ePub): ePub.

Abstract

BACKGROUND: Fall prevention is crucial for older adults. Enhanced fall risk perception can encourage older adults to participate in fall prevention programs. However, there is still no unified definition of the concept of fall risk perception.

OBJECTIVE: To explore the concept of fall risk perception in older adults.

DESIGN: A concept analysis. DATA SOURCES: The literature was searched using online databases including PubMed, Cochrane Library, Embase, CINAHL Complete, PsycINFO, Web of Science, China National Knowledge Infrastructure, WangFang and SinoMed. Searches were also conducted in Chinese and English dictionaries. The literature dates from the establishment of the database to April 2023.

METHODS: The methods of Walker and Avant were used to identify antecedents, attributes and consequences of the concept of "fall risk perception" in older adults.

RESULTS: Eighteen publications were included eventually. The attributes were identified as: (1) dynamic change, with features of continuum and stage; (2) whether falls are taken seriously; (3) a self-assessment of the fall probability, which is driven by individual independence; and (4) involves multiple complex emotional responses. The antecedents were identified as: (1) demographic and disease factors; (2) psychological factors and (3) environmental factors. The consequences were identified as: (1) risk-taking behaviour; (2) risk compensation behaviour; (3) risk transfer behaviour; and (4) emotions.

CONCLUSION: A theoretical definition of fall risk perception was identified. A conceptual model was developed to demonstrate the theoretical relationships between antecedents, attributes and consequences. This is helpful for the development of relevant theories and the formulation of fall prevention measures based on fall risk perception as the intervention target.

Epidemiological features of 1,332 cases of hip fracture in Shanghai, China (2015-2020)

Abstract

PURPOSE: This study aimed to analyze the epidemiological characteristics of hip fracture in all age groups in Shanghai, and to evaluate the hospitalization cost of patients with hip fracture.

METHODS: A total of 1,332 hip fracture patients admitted to a tertiary general hospital between January 2015 and May 2020 in Shanghai were included. Age, sex, diagnosis, cause of injury and site, fracture type, comorbidities, length of stay, treatment, outcomes (at discharge) and hospitalization expenses were recorded. The epidemiological characteristics of hip fracture were analyzed by using SPSS 26.0 software.

RESULTS: The average age of hip fracture was 77.24 ± 12.66 years, and 69.0% of the patients were female. Overall, 886 patients had femoral neck fracture, and 446 patients suffered from intertrochanteric fracture. Most of the fractures caused by falls at the same level and falls from a height occurred in those aged 81-90 years; and traffic accident injuries mostly took place in patients aged 50-60. Among the 1,302 hip fracture patients who underwent surgical treatment, hip replacement was the major choice for femoral neck fracture, accounting for 49.2%. Internal fixation was the main treatment choice for intertrochanteric fracture, making up 97.8%. The median length of hospital stay lasted 8 days and at cost of hospitalization was ¥49,138.18 RMB.

CONCLUSION: This epidemiological study found that patients with hip fracture had certain distribution characteristics in age, sex, type of fracture, injury season, cause of injury, mode of operation, length of stay, cost, and so on. Proper medical management, social preventive measures, and prevention of falls are needed to reduce the risk of hip fracture and the socioeconomic burden.

Early economic evaluation of the digital gait analysis system for fall prevention: preliminary analysis of the GaitSmart system

Zanghelini F, Xydopoulos G, Fordham R, Rodgers G, Khanal S. Aging Med. (Milton) 2024; 7(1): 74-83.

Abstract

OBJECTIVE: To develop an early economics evaluation (EEE) to assess the cost-effectiveness of the GS in reducing the RoF and FoF.

METHODS: A cost-effectiveness analysis (CEA) with a return on investment (RoI) estimation was performed. CEA used the most relevant parameters, such as increased gait speed and decreased FoF, to estimate the reduction in the RoF, the impact on health care resources used and financial implications for the National Health System in the United Kingdom. Outcomes were measured as incremental cost-effectiveness ratio per quality-adjusted life years (QALYs) gained based on the reduction of the RoF and FoF. Uncertainties around the main parameters used were evaluated by probabilistic sensitivity analysis.

RESULTS: The CEA results showed that the GS is a dominant strategy over the standard of care to improve the movements of older persons who have suffered a fall or are afraid of falling (incremental QALYs based on FoF = 0.77 and QALYs based on RoF = 1.07, cost of FoF = -£4479.57 and cost of RoF = -£2901.79). By implementing the GS, the ROI results suggest that every pound invested in the GS could result in cost savings of £1.85/patient based on the RoF reduction and £11.16/patient based on the FoF reduction. The probability of being cost saving based on the number of iterations were 79.4 percent (based on FoF) and 100 percent (based on RoF).

CONCLUSION: The EEE supports the main hypothesis that the GS is an effective intervention to avoid falls and is potentially cost saving.

Analysis of functional efficiency and risk of falls in patients with different types of dementia - preliminary observations

Abstract

INTRODUCTION AND OBJECTIVE: Dementia is a multifactorial neurological disease that affects 50 million people worldwide. It is a disorder that impairs cognitive functions, functional efficiency, balance and gait. It contributes to an increased risk of falls, reduces independence in everyday activities and deepens disability. The aim of the study was to investigate the correlation between dementia and independence related to functional efficiency and risk of falls in the elderly. MATERIAL AND METHODS: The eligibility criterion for participation in the study was age over 60, the presence of cognitive disorders, including dementia, and the ability to move with the use of orthopaedic equipment or independently. A total of 51 people participated in the study, including 13 people who underwent rehabilitation procedures. Each subject was evaluated once for cognitive abilities using two types of tests: the ADL scale, MMSE (Mini-Mental state Examination) and three physical fitness tests: SPPB (Short Physical Performance Battery), TUG (Timed Up & Go) and FRT (Functional Reach Test).

RESULTS: The average score of the MMSE test was 13.29 ± 6.23 points, the average of the ADL scale was 4.20 ± 1.23 points. A positive correlation was found between the level of dementia and the independence of the examined person, as well as a positive relationship between the MMSE test and the result of the Functional Reach Test, and the relationship between the ADL scale and the SPPB and 'Get-Up and Go' tests.

CONCLUSIONS: It has been demonstrated inter alia that static balance and functional efficiency depends on the patient's independence in everyday activities, and the level of dementia may suggest the patient's dynamic balance. In addition, the need for a broader analysis of targeted studies was recognized to confirm the conclusions obtained.