

COMMENTARY

How to tackle the global challenge of falls?

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Abstract

Worldwide, falls and accompanying injuries are increasingly common, making their prevention and management a critical global challenge. The wealth of evidence to support interventions to prevent falls has recently (2022) been distilled in the first World Falls Guideline for Prevention and Management for Older Adults. The core of falls prevention includes (i) risk assessment and stratification; (ii) general recommendations on optimising physical function and mobility for all and (iii) offering a holistic, multidomain intervention to older adults at high risk of falls, in which the older adult's priorities, beliefs and resources are carefully considered. In recent decades, sustainable and adequately resourced falls prevention has proved challenging, although evidence suggests that suboptimal implementation of falls prevention is ineffective. Future research should focus on understanding the most successful approaches for implementation. To further optimise falls prevention, recent developments include technological innovation to identify and prevent falls, including exergaming. Further work is warranted to understand how to best incorporate the concepts of frailty and sarcopenia in falls prevention and management. [This themed collection](#) includes key articles in the field of falls prevention, covering several topics including risk factors, effective interventions, older adult's views, implementation issues and future perspectives.

Keywords: falls, injury, aged, CGA, medication review, shared decision-making, implementation

Key Points

- Worldwide, the population is ageing. Falls and related injuries are increasingly common, making their prevention and management a critical global challenge.
- The core of falls prevention includes (i) risk screening and stratification; (ii) general recommendations on optimising physical function and mobility for all and (iii) a holistic approach which takes medical history of falls, comorbidities, and resources and priorities and beliefs, and resources of the person into account for those at high risk of falls.
- The first World Guidelines for Falls Prevention and Management for Older Adults aim to answer the critical global challenge formed by growing number of falls and accompanying injuries.
- Suboptimal implementation of falls prevention is ineffective. Future research should focus on understanding the most successful approaches for implementation.

A critical global challenge

There is a wealth of evidence to support interventions to prevent falls [1]. Regrettably sustainable and adequately resourced falls prevention remains challenging [1]. Improving implementation is critical considering the worldwide ageing demographic transition and the accompanying increasing prevalence of multimorbidity, polypharmacy and frailty. An increase in the number of falls and related

injuries is to be anticipated [2]. Falls may mutually act as a sign of declining health in older adults [3]. In a recent study, multiple falls were associated with faster decline in memory and non-memory-related cognitive functions and increased risk of developing motoric cognitive risk syndrome [3]. Falls commonly represent functional and non-specific presentations of illness, and many falls can be prevented with multidisciplinary multidomain interventions [2]. To obtain global consensus on the optimal content of falls preventive

interventions and to facilitate knowledge distribution, the first World Guidelines for Falls Prevention and Management for Older Adults have been developed [2].

Who to target?

To apply proportionate falls prevention interventions, fall risk stratification is warranted. However, this is challenging and considering the multifactorial nature of falls, it is unsurprising that the commonly used mobility tests alone do not provide sufficient discriminative ability to identify people who are likely to fall [4]. A new fall risk stratification algorithm was developed for the World Guidelines [2]. In addition to gait/balance instability, the following high risk markers should be considered: (i) whether an injury has occurred, (ii) or multiple falls (iii) or known frailty, (iv) or inability to get up after the fall without help (≥ 1 h) and (v) or (suspected) transient loss of consciousness [2].

Tackling the complexity of falls prevention

Falls tend to result from several interacting risk factors in an individual. These include social and demographic factors, medical factors, medications, balance and mobility factors, sensory and neuromuscular factors, psychological factors and environmental factors [1]. Subsequently, a multi-professional, multifactorial fall risk assessment should be offered to individuals at high risk to guide tailored interventions [2]. In this assessment, medical history of falls (frequency, characteristics and context), fall risk factors, resources of the person (physical, cognitive, psychological and social) and priorities, values and beliefs should be taken into account. In other words, a comprehensive geriatric assessment is required [2]. As part of this, potential underlying diseases need to be addressed, as falls can be non-specific presentations of both acute and chronic diseases. Falls can for example act as a presenting symptom of a COVID-19 infection. In a French study conducted in a nursing home setting, falls before testing was one of the independent predictors of a positive COVID-19 test [5]. Furthermore, unidentified benign paroxysmal positional vertigo (BPPV) was identified in 53% of high falls risk rehabilitation outpatients, underlining the need of BPPV assessment [6].

Towards effective falls prevention

The key elements of falls prevention following risk screening and stratification are optimisation of physical function and mobility for all, and a personalised multidomain intervention for those at high fall risk [2]. We will discuss new developments of several of the components of the multidomain intervention.

Exercise programmes should include balance and functional exercises [2]. An emerging task-specific exercise modality is gait adaptability training (GAT) [7]. During GAT, quick and appropriate voluntary adjustments of gait

patterns in response to obstacles are practiced [7]. GAT variations include low-tech gait/step training, gait/step-based multitask training, exergames and virtual reality obstacles courses [7]. In a recent systematic review and meta-analysis, GAT was associated with decreased fall rates, proportion of fallers and proportion of fall-related fracture [7].

Environmental modifications of an older person's physical home for fall hazards need to consider their capacities and behaviours in this context [2]. The importance of home adaptations was demonstrated by a recent retrospective longitudinal controlled non-randomised intervention cohort study [8]. In this study, by Hollinghurst *et al.*, 657,536 individuals older adults living in Wales were included and home adaptations reduced the odds of falling post-intervention [8].

Another core component of the multidomain intervention is medication review with the aim of deprescribing [2]. In a medication review, the potential beneficial effects of therapy must be balanced against potential and manifest adverse drug events [2]. Medication review and deprescribing is often a challenging process, frequently leading to therapeutic dilemmas. An illustrative example are analgesics. Both pain and opioid drugs increase the risk of falls [9, 10]. In a recent prospective cohort study, in addition to being a risk factor for multiple falls, pain was associated with impaired reactive balance [10], similarly to opioid use [9]. To tackle these dilemmas, medication review within a CGA to produce a personalised medication strategy is warranted [2]. Utilising deprescribing tools such as STOPPFall can potentially increase the quality of the approach [9].

Individuals at intermediate to high falls risk should be offered a fracture risk assessment [2]. Conversely, persons with low trauma fractures and those with osteoporosis should be offered a falls risk assessment [2]. Kim *et al.* showed that a recent fall indicates a high imminent (<12-month) risk of fracture, which was comparable to the risk related to recent fracture [11]. Therefore, the authors argued that older patients with a recent fall should be assessed and treated similarly to patients with a recent fracture [11].

A holistic and personalised approach also forms the core of falls prevention in hospitals and care homes. In a recent systematic review and meta-analysis, multidomain interventions had a tendency towards producing positive impact among hospitalised patients [12]. Education of patients and staff reduced in-hospital falls and should be part of a falls prevention strategy in hospitals [12]. However, patients' cognitive status (including delirium or dementia) should be considered when implementing educational programmes in order to improve uptake and effectiveness. Measures such as use of scored risk assessment tools, bed or chair alarms, wearable sensors and use of scored risk assessment tools did not reduce falls [12].

Older adult's perspective

Optimal falls prevention requires person-centred approaches including perspectives from patients, caregivers and other

stakeholders i.e. shared decision-making. Practitioners should routinely ask about falls in their interactions with older adults, as often they will not be spontaneously reported [2]. Second, a comprehensive falls assessment should include assessment of the perceptions the older adult holds about falls, their causes, future risk and how they can be prevented [2]. A recent qualitative study approach showed that worries about falling develop in response to an older adult recognising their vulnerability for an injurious fall [13]. Ellmers *et al.* stated that perceived control is a crucial component in deciding whether concerns about falling are protective or maladaptive [13]. High perception of control led to protective behavioural adaptations in contrast to low perceived control which triggered a negative spiral of unhelpful changes in behaviour or panic [13]. Finally, the values and preferences of the older adult should be incorporated in the developed care plan [2].

Implementation

Successful implementation of falls prevention remains challenging, and evidence suggests that suboptimal intervention is ineffective. This is demonstrated by some recent large pragmatic trials which were not effective, possibly due to lack of adherence, fidelity to interventions or rigorousness in applying the protocols developed in earlier successful multi-factorial falls prevention trials [14–16]. For example, adherence to exercise programmes such as the Falls Management Exercise (FaME) programme is low [17]. In a recent study, instructors' qualities, low cost, adaptations to exercises for inclusion, home exercises that can be incorporated into daily life, social interaction, improvements in health, mobility and psychological well-being were identified as important factors promoting adherence to FaME [17]. The main self-reported barriers to adherence by older adults were lack of discipline and motivation, poor physical health and caring responsibilities [17].

The implementation process should include quality improvement approaches to improve and refine intervention delivery [2]. This approach should include engagement with key stakeholders involved in the changes being made and measurement of care processes [2].

Gaps and future perspectives

During the past decade, technology has emerged as a promising tool in the field of falls identification and prevention that could potentially radically improve falls prevention in the future. For example, with wearable sensors it is feasible to monitor activity in older adults living at home which could provide the possibility of automated fall detection and incorporation of remote fall assessments into clinical care [1]. However, the technology is not there yet as the wearable fall detection devices are not sufficiently able to distinguish falls from other activities [1]. Another example is the use of exercise-based videogames (exergames) [1]. These

can potentially increase adherence of exercise by combining player movement, enjoyment and performance feedback.

Falls are closely linked, clinically and epidemiologically, to other common 'geriatric syndromes' such as sarcopenia and frailty [2]. Both of them are associated with increased risk of falling. However, further research and consensus is warranted to understand how to diagnose and treat sarcopenia in individuals at risk of falls and whether applying interventions for older adults with sarcopenia such as exercise and especially protein supplementation would reduce fall risk [2]. Similarly, we need to understand better how to incorporate the frailty concept into management of falls and whether such an approach will reduce the risk of falls [2]. A recent study demonstrated that screening for sarcopenia and frailty in a busy fracture clinic is acceptable to patients and staff and feasible [18]. In this study, simple brief self-completed questionnaires such as the SARC-F for sarcopenia and the PRISMA-7 for frailty had good sensitivity and specificity (compared to golden standards) and required few additional resources [18].

Conclusion

Through [this themed collection](#), we highlighted the breadth, depth and progress in the field of falls prevention which is well presented in the selected 15 high-quality articles published in *Age and Ageing*. There is, however, still a great deal of work to be done to understand the most successful approaches for implementation to increase the uptake and adherence of the interventions. The key element of falls prevention for those at high risk is a personalised multidomain intervention. Future research should help us to optimise the content of the individual components and give insights into who should be offered which component. In each of these components, the perspectives of the older individual should be taken into account. Technology has emerged as a promising tool that could improve falls detection and prevention.

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