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Review

Implementation of fall prevention in residential care facilities: A systematic review of barriers and facilitators

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ABSTRACT

Objectives: To identify the barriers and facilitators for fall prevention implementation in residential care facilities.
Design: Systematic review. Review registration number on PROSPERO: CRD42013004655.
Data sources: Two independent reviewers systematically searched five databases (i.e. MEDLINE, EMBASE, CINAHL, PsycINFO, and Web of Science) and the reference lists of relevant articles.
Review methods: This systematic review was conducted in line with the Center for Reviews and Dissemination Handbook and reported according to the PRISMA guideline. Only original research focusing on determinants of fall prevention implementation in residential care facilities was included. We used the Mixed Method Appraisal Tool for quality appraisal. Thematic analysis was performed for qualitative data; quantitative data were analyzed descriptively. To synthesize the results, we used the framework of Grol and colleagues that describes six healthcare levels wherein implementation barriers and facilitators can be identified.
Results: We found eight relevant studies, identifying 44 determinants that influence implementation. Of these, 17 were facilitators and 27 were barriers. Results indicated that the social and organizational levels have the greatest number of influencing factors (9 and 14, respectively), whereas resident and economical/political levels have the least (3 and 4, respectively). The most cited facilitators were good communication and facility equipment availability, while staff feeling overwhelmed, helpless, frustrated and concerned about their ability to control fall management, staffing issues, limited knowledge and skills (i.e., general clinical skill deficiencies, poor fall management skills or lack of computer skills); and poor communication were the most cited barriers.
Conclusion: Successful implementation of fall prevention depends on many factors across different healthcare levels. The focus of implementation interventions, however, should be on modifiable barriers and facilitators such as communication, knowledge, and skills. Effective fall prevention must consist of multifactorial interventions that target each resident's fall risk profile, and should be tailored to overcome context-specific barriers and put into action the identified facilitators.

What is already known about the topic?

- Multifactorial interventions, tailored to each resident's fall risk profile, can reduce the number of falls and recurrent fallers under highly controlled circumstances, but seems to be ineffective under "real-world" conditions, presumably due to poor implementation.
- Successful implementation of complex, multifactorial interventions in clinical practice involves a tailored, multifaceted approach based on a good understanding of barriers and facilitators for implementation. No reviews exist that comprehensively summarize the evidence on fall prevention implementation barriers and facilitators in residential care settings.

What this paper adds

- Seventeen facilitators and 27 barriers that influenced the implementation of fall prevention were identified across different healthcare levels. The social and organizational levels

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have the greatest number of influencing factors, whereas resident and economical/political levels have the least.
- Most cited facilitators were good communication and facility equipment availability, while staff feeling overwhelmed, helpless, frustrated and concerned about their ability to control fall management, staffing issues, limited knowledge and skills; and poor communication were the most cited barriers.
- Effective fall prevention should be tailored to overcome context-specific barriers and put into action the identified facilitators.

1. Introduction

With an estimated incidence of 1.6 falls per person-year, falls are gaining increased attention in residential care facilities (Rapp et al., 2012). Although most falls result in minor injuries, 63.5% of annual accidental deaths in those older than 75 in the USA are caused by falls (National Center for Injury Prevention and Control, 2015). A recent study stated that 89.1% of external cause deaths of nursing home residents were due to falls (Ibrahim et al., 2015). Besides physical complications, falls lead to psychological consequences, such as fear of falling, depression, and social isolation (Kannus et al., 2005; Rubenstein and Josephson, 2002). Furthermore, falls are associated with extensive healthcare costs (Burns et al., 2016).

Over the years, many preventive actions have been tested in residential care facilities (Cameron et al., 2012; Oliver et al., 2007; Vlaeyen et al., 2015). A recent *meta*-analysis states that multifactorial interventions, tailored to each resident's fall risk profile, can significantly reduce the number of falls and recurrent fallers (Vlaeyen et al., 2015). However, this *meta*-analysis reviewed interventions performed under highly controlled circumstances (i.e., randomized controlled trials) which may overestimate an intervention's effect when implemented in clinical practice, under "real-world" conditions. So, although a highly controlled trial maximizes the likelihood of observing an intervention effect if one exists, different healthcare level factors, such as factors related to the resident, the provider or the system, may moderate an intervention's effect (Singal and Waljee, 2014).

To facilitate implementation and gain insights into the mechanisms by which implementation is likely to succeed, the need to establish theoretical bases of implementation strategies is widely recognized. Implementation science, therefore, progressed towards an abundant use of theoretical approaches (e.g., implementation theories, models or frameworks) aimed to: (1) describe/guide the process of implementation, (2) understand/explain what influences implementation outcomes, or (3) evaluate implementation. To understand and explain what influences implementation outcomes, determinant frameworks (i.e., frameworks that describe general types of influencing determinants, typically comprised a number of individual barriers and/or facilitators) can be used (Nilsen, 2015). These determinant frameworks suggest that successful implementation of complex, multifactorial interventions in clinical practice involves a tailored, multifaceted approach based on a good understanding of barriers and facilitators for implementation (Grol, 1997; Nilsen, 2015). Unfortunately, no reviews exist that comprehensively summarize the evidence on fall prevention implementation barriers and facilitators in residential care settings. Only two reviews addressed older persons' perception of fall prevention, which is just one factor of implementation (Bunn et al., 2008; McInnes and Askie, 2004). Another narrative review investigated fall prevention effectiveness and reported implementation barriers of included articles, but failed to consider facilitators (Neyens et al., 2011). It would be valuable to also know which factors are the drivers of success. Therefore, the present systematic review aims to identify fall prevention implementation barriers and facilitators in residential care facilities.

2. Methods

This systematic review was conducted in line with the Center for Reviews and Dissemination Handbook for undertaking review in health care and reported according to the PRISMA guideline (Centre for Reviews and Dissemination, 2009; Liberati et al., 2009; Moher et al., 2009). The protocol was registered in the PROSPERO database (ID# CRD42013004655) (PROSPERO, 2016).

2.1. Search strategy

A systematic literature search was performed using five electronic databases from inception to August 2016: MEDLINE, EMBASE, CINAHL, PsycINFO, and Web of Science. Both MeSH terms and "free" search terms were combined with Boolean operators and adapted for each database to build a search string (see Fig. 1).

Search Query
Search ("Accidental Falls"[Mesh]OR "Fall prevention" OR "Fall") AND ("Nursing Homes"[Mesh] OR "Homes for the Aged"[Mesh] OR "Residential Facilities"[Mesh] OR "Long-Term Care"[Mesh] OR "Institutionalization"[Mesh] OR "Rest home*" OR "Retirement facilities" OR "Retirement home*") AND ("Health Plan Implementation"[Mesh] OR "Program Evaluation"[Mesh] OR "Information Dissemination"[Mesh] OR "Attitude of Health Personnel"[Mesh] OR "Organizational Innovation"[Mesh] OR "Health Behavior"[Mesh] OR "Guideline Adherence"[Mesh] OR "Health Knowledge, Attitudes, Practice"[Mesh] OR "Motivation"[Mesh] OR "Quality Improvement"[Mesh] OR "Feasibility Studies"[Mesh] OR "Process Assessment (Health Care)"[Mesh] OR "Implement*" OR "Integrat*" OR "Research utilization" OR "Disseminat*" OR "Manage*" OR "Adopt*" OR "Uptake" OR "Evaluat*" OR "Reduce*" OR "Prevent*" OR "Translat*" OR "Motivators" OR "Barrier*" OR "Facilitat*" OR "Influencing factor*" OR "Influenc*" OR "Improv*" OR "Awareness" OR "Perspective*" OR "Knowledge transfer" OR "Complian*" OR "Challenge*" OR "Feasibility" OR "Motivat*" OR "Behavior" OR "Behavioral change" OR "Skill*" OR "Conflict" OR "Attitude" OR "Norm" OR "Self-efficacy" OR "Abilities" OR "Adherence")

Fig 1. Search strategy used for MEDLINE (OVID) and adapted for Embase, CINAHL, PsycINFO, and Web of Science.