

Prevention of Falls - Interventions in the Home Visits to the Elderly: Scoping Review

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ABSTRACT

Background

The prevalence of falls in the elderly population is high, causing mortality, morbidity, and loss of functionality, contributing to an increase in the elderly's dependence, loss of quality of life and decrease in the average life expectancy. This study aims to identify the interventions performed during the home visit that may have an impact on the reduction of risk, on the prevention of falls, on their recurrence and / or on secondary injuries.

Methods and Findings

Scoping review, with the inclusion of primary studies to answer the research question: Which nursing interventions during the home visit prevent the (C) fall in the home (Co) of the Elderly Person? Research conducted in the databases available on the search engines of EBSCO, B-On, ISI; SCOPUS and JBI, inclusion and exclusion criteria were defined. The search time limit has been restricted to the last 5 years.

The 10 studies that integrate the sample are heterogeneous, evaluated a total of 32,308 elderly. The use of cognitive-behavioral strategies has a positive effect on reducing mortality, institutionalization, falls and functional decline. The results of our investigation are not conclusive as to the effect of physical exercise performed at home in the prevention of falls. The elderly positively evaluate the performance of home visits to prevent falls.

Conclusions

Evidence on the effectiveness of home visits for falls prevention is low. Future studies should explore the effectiveness of different programs to promote physical activity and social participation in reducing the risk and prevalence of falls.

Keywords

Accidental falls; Elderly; Community nursing; Nursing practice; Home visit

Introduction

Falls are the third cause of chronic disability in the elderly, are recognized as a "growth area", due to the negative impact that it has on the functionality of the elderly, being responsible

for high morbidity, mortality, and suffering and increased cost with the treatment of the injuries secondary to this event [1,2]. The health costs associated with falls are very significant. In the United States, in 2015, approximately 592.4

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million euros were spent with fatal injuries associated with this phenomenon and 29 billion euros with non-fatal injuries associated with it [3].

Implementing a fall prevention policy in this population challenges health professionals, including primary health care nurses, to identify risk factors and to implement appropriate individual preventive measures. The intervention should aim at preventing the fall, but also its recurrence. About 30% of older adults report a fall episode per year and one in five falls require health care, taking one in 10 incidents of falls as a result of a fracture [4]. Some authors observe that 1/3 of the elderly fall in the community context, and that the fall at home has serious consequences, because it generates functional incapacity and contributes to the increase of the dependency of the elderly, and is one of the main causes of institutionalization of the elderly, however, the institutionalization will continue to affect the elderly since the prevalence of falls is higher in these places [2,5-7].

Falling beyond provoking the loss of autonomy and independence [8], may modify the need for special care, the need for recovery or rehabilitation of the elderly after the fall.

In the last years, several studies have identified the preventive measures of fall, singular or multiple, with the elderly in different contexts - community, hospital and residential structures for the elderly. Systematic reviews identify as preventive measures for falls for the elderly in the community: programs of exercise of strength and balance in group or individual at home, however, with the proviso that exercises should be judicious and prescription because they can lead to cardiovascular events and musculoskeletal injuries; visual evaluation with early intervention when present cataract or other; therapeutic reconciliation with gradual reduction of psychotropic drugs; placement of pacemaker in people with carotid sinus hypersensitivity; vitamin D supplementation in people with vitamin D deficiency; safety in the home and also correction of the type of footwear, namely the use of customized insoles and the use of non-slip footwear, emphasizing that educational intervention programs in symbiosis with those of exercise of strength and balance were those that obtained higher rates of success in preventing falls in the elderly living in the community [9-11].

Of the 159 RCTs that are part of the systematic review of the Cochrane literature, widely accept-

ed by the scientific community and frequently cited in the specific literature on the subject, some evaluate the intervention done at home by nurses or other health technicians alone or in a group focusing on environmental change to reduce obstacles, increase mobility and safety [9], however, the results do not value nurses' interventions in the home visit and their impact on reducing prevalence, risk, recurrence or secondary injuries to fall episodes.

The review of the literature shows that the international guidelines and the results of the research do not attribute the value due to the home visit of the nurse and the interventions that the nurse can implement in the home of the elderly person, especially in those who are most vulnerable. We agreed that despite advances in research, there is little evidence on how to implement preventive strategies. The same authors consider that for the elderly to benefit from evidence-based interventions it is necessary to introduce them into the real world because the development of effective interventions is a crucial first step in resolving the persistent problems of health professionals, the use of such interventions has to be on a scale broad enough to benefit society, and this requires careful attention in the implementation of strategies [12].

We consider that the visit of the nurse to the home of the elderly can constitute an important action for the evaluation of the risk and implementation of preventive measures of falls and their recurrence in the elderly.

This study aims to identify the interventions performed during the home visit that may have an impact on the reduction of risk, on the prevention of falls, on their recurrence and / or on secondary injuries.

Materials and Methods

In order to reach the objective of this study, we conducted a Scoping Review guided by the following research question: Which nursing interventions during the home visit prevent the (C) fall in the home (Co) of the Elderly Person?

We follow the protocol which comprises 5 stages: (1) definition of the objective, (2) identification of the relevant studies, (3) selection of studies based on quality assessment, extract the results and (5) synthesize and disseminate the results [13].

This review will allow a preliminary analysis of what exists in terms of research results and good clinical practices in the prevention of falls in the

home of the elderly and identify areas where further research is needed.

The definition of the research question made it possible to define the inclusion / exclusion criteria for primary studies (Table 1), with the purpose of narrowing the confidence intervals, facilitating the comparison of the works, interpreting the data and increasing the accuracy of the results. Primary studies have been included that clearly define the objectives.

The research was carried out from November 2016 to January 2017, in English, restricting the search for articles available in full text and the last 5 years (2012-2016).

The following descriptors were used: “nurs *”, “interventions”, “community”, “home visit”, “elderly”, “aging”, “falls”, “associations” (AND and OR) in EBSCO’s search engines, B-On, ISI; SCOPUS and JBI.

The research was carried out by one of the researchers, after consensus on the terms of research. Two of the investigators evaluated the articles to obtain agreement on the constituent articles of the sample, according to the defined inclusion / exclusion criteria.

The potential sample consisted of 55 studies (EBSCO-27; ISI-7; SCOPUS-21; JBI-0) that met the inclusion criteria. The reading and analysis of the title and summary allowed immediately to eliminate 12 repeated articles, obtained in different databases.

The reading and analysis of the study summary conditioned the selection to 24 and the analysis of the full text to 10 (Figure 1).

For the extraction of results, a table was created in an excel file with author, year of publication, country of origin of the study (S), objectives, population or sample, methods, type of intervention, duration of intervention, results of intervention, fall and / or injury), and the response to the research question of this review and a column for observations, where we place our analysis on the limitations of the study or the questions that arose during the analysis of the article.

Results

The bibliographical sample of this investigation consists of 10 studies that meet the inclusion / exclusion criteria previously defined and that allows to answer the research question.

The investigations are heterogeneous from the point of view of the study design and in terms of the sample, intervention implemented, concepts used, measures and moments of evaluation of the effectiveness of the intervention, which makes it difficult to compare the results.

Prevalence of quantitative research (n = 8), with 6 RCTs and one RSL with meta-analysis, one research (S1) is qualitative and the other is mixed (S3).

The included studies evaluated 32,308 elderly people. The sample of the different studies ranged from 17 elderly individuals in S1 to 28642 elderly in S2, which is a systematic review of the literature that included 64 articles with the objective of evaluating the efficacy of preventive home visits on mortality, hospitalization, falls, injuries, functional capacity, quality of life and psychiatric illness.

Table 1: Inclusion criteria and exclusion criteria of the studies composing the sample. Lisbon; 2017.

Inclusion criteria	Exclusion criteria
<p>Participants</p> <ul style="list-style-type: none"> • Elderly (≥ 65 years) • Elderly without cognitive decline • Both sexes <p>Context</p> <ul style="list-style-type: none"> • Community • House of the elderly <p>Type of article</p> <ul style="list-style-type: none"> • Systematic Literature Review • Studies that evaluate the impact of the intervention (s) performed during the home visit on the risk of fall, fall or resulting lesions • Articles describing intervention projects for the prevention of falls in the elderly household <p>Time limit: 2012-2016 Full text</p>	<p>Participants</p> <ul style="list-style-type: none"> • Age ≤ 65 years • Elderly people with cognitive decline • Context • Inpatient or institutionalized elderly people

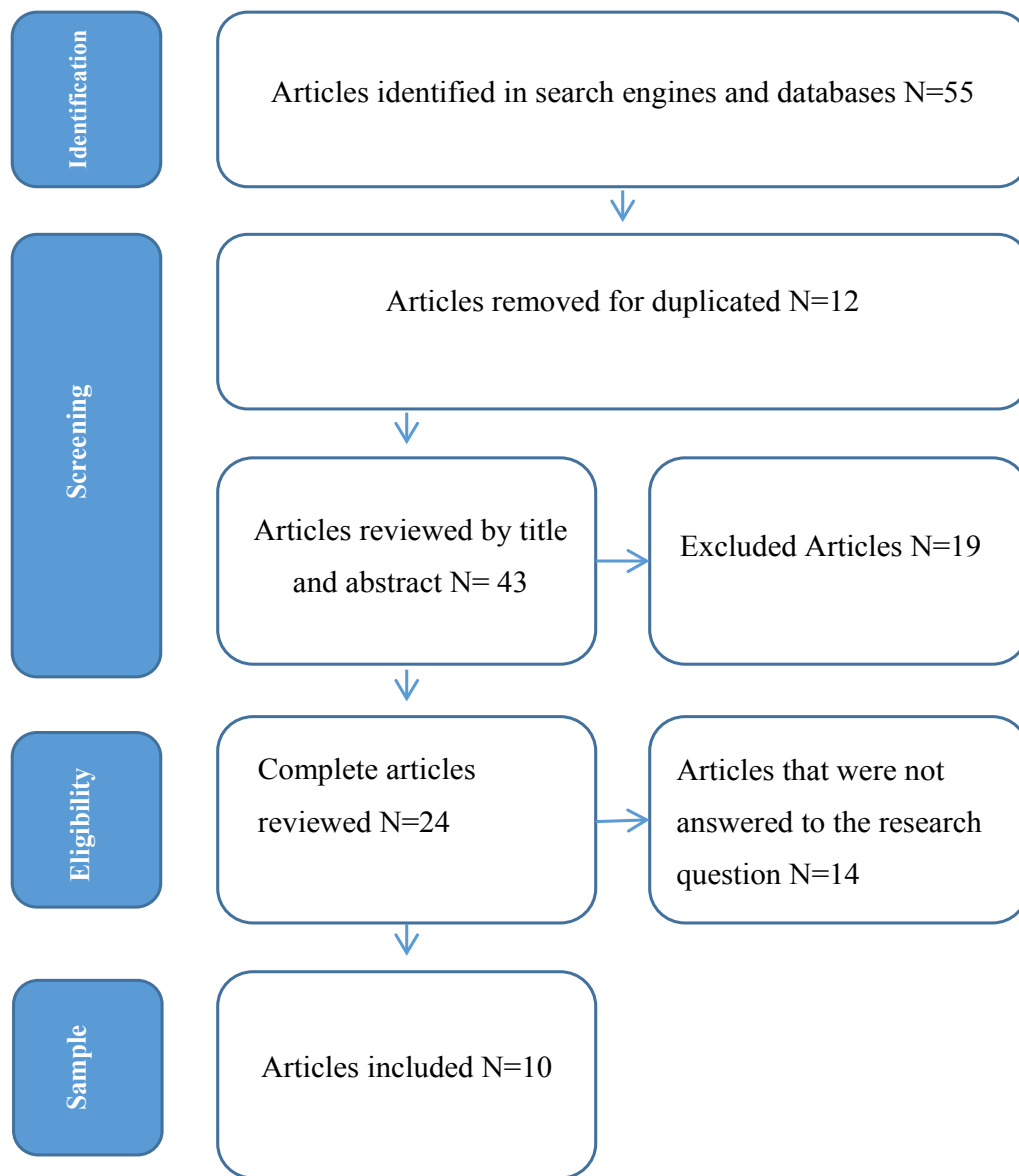


Figure 1: Scoping review flowchart, based on PRISMA. Lisbon; 2017.

The different investigations include only the elderly, but not only varies the average age of the participants as the inclusion criteria in relation to age, in the S6 and S10 the authors defined as inclusion criteria for age people 70 years or older; in S1, S8 and S9 the criterion was people aged 80 or over. This fact is important, although the elderly are stereotyped as a homogeneous group, and the age difference between 65 and 92 years (S1) imply large differences from the point of view of the unique aging experience and the probability of whether or not there is functional and cognitive decline, and therefore the approach to prevent falls and recurrence, risk management, and the implementation of interventions must

be adequate for this heterogeneity.

In the S1 study [14] the investigators evaluated the variation in the experience of elderly individuals aged 80 years or older in relation to a single preventive domiciliary visit and concluded that the structured preventive home visit can empower the participants, strengthen self-esteem, provide information that enables control, and make older people more aware of the importance of prevention to stay active for longer.

After analyzing the studies included in the systematic review of the literature (S2), researchers [15] conclude that the home visit

is not consistently associated with differences in mortality or independent living, and investigations of heterogeneity have identified no program associated with consistent benefits, however, the researchers emphasize that in some investigations, the poor description of the intervention and the likelihood of not presenting all the data leaves in doubt the possibility of effective interventions that are not reported.

In the S3 [16] and S5 [17] the investigators focused on cognitive-behavioral programs. In S3 the researchers implemented a program that includes 7 sessions (3 home visits and telephone contact). The program focused on falls concerns; thoughts about falling; physical exercise; safe behavior and management of falls concerns. Each session had a similar structure: revision of the previous session; discussion of the theme of the current session and definition of a personal plan of action on the session. Participants positively evaluated the program as having safer behaviors, but the researchers considered that the program had no significant impact on risk management [16].

Study 5, the intervention developed by nurses, was intended to instill adaptive and realistic views about the risk of falling through cognitive restructuring, increase activity and safe behavior through goal setting and action planning, researchers conclude that such programs significantly reduce concerns about falls, avoidance of activity related to fear of falling, disability and falls in the home of the most fragile elderly, also considered that the program can extend independent living for people who do not are eligible to participate in group programs [17].

In S4 [18] the investigators evaluated the effectiveness of a multidisciplinary program in a group of elderly people with functional dependence and a previous history of injury, and concluded that the intervention was not effective in preventing falls and associated lesions.

The S6 [19] evaluated an interdisciplinary intervention, which included 10 home visits with an individualized program of home exercises and management of medical, psychological and social problems. The program decreases risk but not the prevalence of falls.

In S7 [20], a functional exercise program (LiFE) with a focus on balance and muscular strength integrated into the execution of daily life activities was implemented. The prevalence of

falls in the intervention group was 31% lower than in the control group, the participants still had gains in the static and dynamic balance.

In S8 [21] the researchers opted for a program with 3 home visits to assess the risk of falls, advise on environmental modification and behavioral reinforcement. The results demonstrate a decrease in the number of falls in the intervention group.

The S9 [22] evaluated the effect of an advanced nursing consultation program on quality of life and some health indicators, namely falls. The program includes 4 home visits and 3 telephone contacts. Regarding falls, the researchers believe that consultations conducted by advanced practice nurses can reduce the number of falls and associated injuries.

In the S10 [23] authors concludes that preventive home visit with fall risk screening is important, providing information that allows the individualization of interventions to prevent falls, maintain independence and promote health in the resident elderly population in the community.

Discussion

The studies constituting the bibliographic sample are heterogeneous and the results are not consensual in relation to the effectiveness of some interventions to be implemented in the home visit. Although the effects of home visiting programs are discussed in the different studies in order to prevent falls and / or reduce risk, asymmetries in the study design and instruments used make it difficult to compare the data, however, it is possible to conclude that home visits of preventive character with the use of cognitive-behavioral strategies have a positive effect in reducing mortality, institutionalization, falls and functional decline [16,17].

In the RCT conducted by Dorresteijn and collaborators [17], the use of cognitive-behavioral strategies also showed positive effects in reducing the evicition of the activity associated with the fear of falling. Ptofobia has physical and psychosocial consequences, which increase the probability of functional decline, the occurrence of falls, lack of confidence in the performance of ADL, restriction of activity and lower social participation [2,4].

In the investigation by Luck. [21], the results indicate that advice on environmental modification and behavioral reinforcement

reduces the prevalence of falls. Future studies should explore these interventions since most falls happen inside the home of the elderly and environmental factors are less explored in research than biophysiological ones.

The results of our investigation are not conclusive as to the effect of physical exercise performed at home in the prevention of falls [18-23]. Future research should verify not only the impact of different types of exercises, intensity, and frequency but also the type and frequency of supervision performed by professionals [18] and effective adherence to the proposed exercise program.

The focus on integrated care systems using information technologies to ensure continuity of care, involving informal caregivers and caregivers with collaborative care models, can increase access to high-quality care for the elderly and their caregivers, assisting professionals in the control of chronic diseases [24] and geriatric syndromes. It is our belief that future studies with intervention in the people's home should explore the impact of new technologies on the fall, fear of falling, recurrence and evolution of functionality after the fall.

The different investigations used diversified risk assessment tools ranging from scales, for example the Downton Fall Risk Index [18,23] and Falls Efficacy Scale-International (FES-I) [17], to functional evaluation instruments such as the Timed Up and Go Test (TUGT) [18] and the placing of a single question about whether or not it has fallen recently [18], 6 months [20], 9 months [22] and 12 months [17,19,20]. Some studies have used a single instrument to assess the risk of falling [22], others have used more than one [18]. Randomized trials used different times to assess the prevalence of falls, 3, 9 and 12 months.

As it was referenced, the studies use different ages which may alter the results. Increasing age has been associated with increased risk, prevalence, and injury associated with falls [6], and the highest prevalence of risk of falls (50.5%) is found in the elderly with ≥ 80 years [23,25]. Primary health care interventions provided at home provide services to populations with different health risks and allow for a diversity of care ranging from falls prevention to palliative care, these preventive visit programs favor health maintenance and independence and consequently prevent unnecessary disabilities and hospitalizations, reducing costs [14].

With regard to falls, some studies indicate that preventive home visits may be effective in reducing falls in older people in the community [21], but the conclusions of the studies are not clear as to the effectiveness of some interventions at home on risk reduction and fall prevalence [15]. The difficulty in evaluating effectiveness is also due to the fact that some visits included recommendations for environmental modifications, changes in unsafe behavior, choice of footwear, and other support products, physical exercise, medication change, type of intervention in adhering to such recommendations and the support and support given by professionals. The results of E1 allow us to realize that elderly people involved in fall prevention programs that include home visits can stay active longer and adopt preventive measures [14].

It should be noted that the results and discussion of the data of some studies do not allow to identify if the researchers took into account variables of gender and demographic partner that can affect the prevalence of falls and the effectiveness of the intervention, since the results of the investigation report that the prevalence of the risk of falls is high among women living alone (48%) [9,23]. In the study conducted by Luck and colleagues [21], the prevalence of falls has been influenced by the degree of dependency of the elderly, but not all studies report whether or not the degree of dependence is assessed in their research.

A group of researchers report in their study that although preventive home visits may be effective in reducing falls, they consume a lot of time and resources, and therefore question their cost-effectiveness [21]. We disagree with this view because the home visit itself is a very important strategy for assessing the risk of falls related to environmental factors, allowing not only immediate intervention, but also the planning of future interventions, including the involvement of other professionals [26], with an impact on customer satisfaction [14] and this evaluation indicator should not be overlooked. However, we agree with the authors that in order to improve the cost-effectiveness and results of preventive home visits in reducing falls, future research should focus on identifying and facilitating the components of a home- which may benefit the majority [21].

Finding the most efficient and effective interventions for this population remains an important goal for practitioners and policymakers [26].

Conclusions

Evidence on the effectiveness of home visits for falls prevention is low. The heterogeneity of the studies that make up the bibliographic sample, the diversity of evaluation instruments and the interventions implemented make it difficult to compare and extrapolate data and findings.

Preventive home visits with a focus on risk assessment, prevention of fall and recurrence, promotion of empowerment, and control of the situation by the elderly may have an impact on reducing the prevalence of this geriatric syndrome. The use of cognitive-behavioral strategies has a positive effect on reducing mortality, institutionalization, falls and functional decline.

Future studies should explore the effectiveness of different programs to promote physical activity and social participation in reducing the risk and prevalence of falls.

The time and resources required to perform the home visit and make it costly justify that in future investigations, nurses explore the use of new technologies and collaborative care network with active community participation and cost-effectiveness.

The magnitude of this problem and the negative influence it has on functionality requires an

additional effort from researchers to design research projects with multiple interventions to determine which are the most effective. It is necessary to design new interventions, to combine different strategies, evaluated through longitudinal studies. For nursing practice and research it is important to associate the different types of interventions.

The results allow us to suggest a broad discussion within the scientific community and praxis professionals about the individual, behavioral, environmental and sociodemographic variables to be measured in this area of research.

The limitations of this study are related to the heterogeneity of the studies and interventions included, the relatively small size of some of the included studies which makes it difficult to assess the evidence of the different interventions.

The results justify the pertinence of home visits to the elderly with a focus on risk assessment and the introduction of measures to prevent falls and their recurrence. Nurses should implement cognitive-behavioral strategies during the home visit. The authors also raise some questions and suggestions that enrich the discussion between researchers and praxis professionals to control this adverse event.

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