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Review Article

Occupational therapist's actions in preventing falls of the elderly person at home: an integrative review of literature (2017-2022)

Ações de terapeutas ocupacionais na prevenção de quedas da pessoa idosa no domicílio: revisão integrativa da literatura (2017-2022)

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Abstract

Introduction: Falls in the elderly are widely discussed by health professionals, due to their physical, functional, and psychosocial consequences, which compromise participation in daily activities. **Objective:** To identify the intervention actions and strategies used by the occupational therapist to prevent falls in the elderly at home. **Method:** This is an integrative literature review, which tracked the scientific productions in the *Biblioteca Virtual em Saúde* (BVS), *MEDLINE/PubMed*, *Scopus, Web of Science*, *CINAHL* and *Embase* databases, in the period of January 2017 to July 2022. **Results:** 19 publications were identified that made up the research corpus, being categorized for analysis in the following points: assessments used by the occupational therapist and the occupational therapist's actions for the prevention of falls, including functional training integrated into daily activities, home environmental adequacy interventions, educational actions and use of technologies and devices. **Conclusion:** The home is the most prone place for the occurrence of falls in the elderly, where the actions of the occupational therapist are significantly important for the maintenance of safety in this context. The occupational therapist's actions contribute to the prevention of falls and maintaining the safety of the elderly at home. In addition, it was noted the incipience of national studies of occupational therapy on the subject, which shows the need to expand the publications of the profession in this field of action.

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Keywords: Accidental Falls, Occupational Therapy, Home, Elderly, Prevention.

Resumo

Introdução: Quedas em pessoas idosas são amplamente discutidas pelos profissionais da saúde, devido às suas consequências físicas, funcionais e psicossociais, as quais comprometem a participação nas Atividades de Vida Diária (AVD). **Objetivo:** Identificar as ações de intervenção e estratégias utilizadas em terapia ocupacional para prevenção de quedas da pessoa idosa no domicílio. **Método:** Trata-se de uma revisão integrativa de literatura, que rastreou as produções científicas nas bases de dados Biblioteca Virtual em Saúde (BVS), *MEDLINE/PubMed, Scopus*, *Web of Science*, *CINAHL* e *Embase*, de janeiro de 2017 a julho de 2022. **Resultados:** As 19 publicações que compuseram o *corpus* desta pesquisa foram categorizadas para análise com base nas avaliações utilizadas pelo terapeuta ocupacional e suas ações para a prevenção de quedas, incluindo: treinamentos funcionais integrados às AVD, intervenções de adequação ambiental domiciliar, ações educativas e utilização de tecnologias e dispositivos assistivos. **Conclusão:** O domicílio é o local mais propenso para a ocorrência de quedas em pessoas idosas. Por isso, as ações de terapeutas ocupacionais são significativamente importantes para a prevenção de quedas e manutenção da segurança da pessoa idosa nesse contexto. Além disso, notou-se a incipiência de estudos nacionais da terapia ocupacional sobre o tema, o que mostra a necessidade de ampliar as publicações da profissão nesse âmbito de atuação.

Palavras-chave: Acidentes por Quedas, Terapia Ocupacional, Domicílio, Pessoa Idosa, Prevenção.

Introduction

Fall accidents impact the quality of life, autonomy and independence of older adults, generating physical, functional and psychosocial consequences, which can lead to functional dependence, disability, hospitalization, institutionalization and even death (Paraná, 2018).

Falling is defined as "[…] inadvertently falling to the ground or other lower level, excluding intentional changes of position to lean on furniture, walls or other objects" (Organização Mundial da Saúde, 2010, p. 9). Statistical data indicate that around 30% of people over 65 years of age and 50% of people over 80 years of age suffer at least one fall per year (National Institute for Health and Care Excellence, 2019; Miranda et al., 2019). These accidents are a serious health problem, highlighting the importance of preventive actions against falls.

Data collected by the Department of Informatics of the Unified Health System (DATASUS) showed that, in 2021, 12,883 deaths were recorded from falls in people over the age of 60, corresponding to 34.7% of the total deaths due to external causes. The data indicated that, as a person ages, the proportion of fall accidents increases significantly, corresponding to 17.2% in people aged 60 to 69 years, 25.3% in people aged 70 to 79 years and 57.5% in people aged 80 or over (Brasil, 2021).

Falls are multifactorial and involve the person, the environment and the occupation. These are the result of the interaction between intrinsic factors (related to the person's

characteristics, such as age, gender, use of medication, presence of chronic diseases, gait disorders and other physical changes associated with aging), extrinsic (related to the closed environment or the air free), behavioral (related to the action of the subject/activity) and socioeconomic (including low income, access to education and health) (Organização Mundial da Saúde, 2010; Barbosa, 2018; Morsch et al., 2016; Romli et al., 2018; Chippendale et al., 2017; Deandrea et al., 2010).

It is noteworthy that 60% to 70% of total falls occur at home, a proportion that increases for elderly people over 75 years old (Gasparotto et al., 2014), as this is the place where elderly people spend most of their time interacting with environmental risk factors and accident facilitators (Miranda et al., 2019).

Thus, the premise of *Ageing in Place* is to enable elderly people to age at home, through strategies to raise awareness and adapt the home and community environment to the aging process, which contributes positively to increased well-being, independence and social participation (Bárrios et al., 2020; Sixsmith & Sixsmith, 2008).

The number of studies examining strategies for preventing falls has increased. Such research reinforces the importance of using a holistic approach by professionals, including occupational therapists, who have skills to develop effective evidence-based actions, through knowledge about the interaction between the environment, the person and the occupation, with the objective of promoting occupational performance and participation (Elliott & Leland, 2018; Pighills et al., 2019; Hughes et al., 2023).

The role of the occupational therapist is based on multidimensional assessment and intervention on risk factors for falls, the use of available interventions and prevention to improve functionality, accessibility and safety at home. That is, occupational therapy offers support to facilitate recovery, build resilience and overcome barriers to occupational performance (Royal College of Occupational Therapists, 2020; Hughes et al., 2023), including habit changes, education interventions and modification environment, prescription of assistive technology, exercise program and referrals (Mackenzie et al., 2018).

Considering the impacts of falls on the functionality, independence and autonomy of elderly people, the objective of this research is to identify intervention actions and strategies carried out by occupational therapists to maintain safety, reduce risk factors and prevent falls in elderly people at home.

Method

This study was developed through an integrative literature review, following the following steps: definition of the theme and selection of the research question, establishment of inclusion and exclusion criteria, identification of pre-selected and selected works, categorization of those selected, analysis and interpretation of results and presentation of the review/synthesis of knowledge (Botelho et al., 2011).

The selection of the corpus occurred by screening national and international scientific productions that met the objective of the study, comprising publications from January 1, 2017 to July 30, 2022. Sources of information Virtual Health Library (VHL), *MEDLINE/ Pubmed* (via the *National Library of Medicine*), *Scopus*, *Web of Science*, *Cumulative Index to Nursing and Allied Health Literature* (CINAHL) and *Embase* were accessed to select the productions in August 2022.

The selection of articles occurred according to the following inclusion criteria: articles that presented information on the prevention of falls in elderly people at home; articles that presented occupational therapist actions and/or interventions at home to prevent falls, based on the identification of the professional's role (referring to the occupational therapeutic process) in the text; articles in Portuguese, English and Spanish; full text articles; and articles published within the established timeframe. The exclusion criteria were: articles carried out in a context other than at home, such as hospitals and Long-Term Institutions for the Elderly (ILPI); articles that did not present occupational therapist actions at home; duplicate articles; publications that were not articles; and literature review and scoping review articles, prioritizing studies with primary data collection to avoid duplication of information.

The search descriptors were selected using Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH). It is noteworthy that the search strategies varied in each database to increase the number of relevant results identified. It was observed that only the BVS uses the DeCS descriptors in its controlled vocabulary. The other databases use MeSH descriptors in their vocabulary. The search strategies used in each database, with descriptors and keywords combined with Boolean operators, are listed in Table 1.

In the search strategies, filters were used, namely: year of publication, language and full text. The data found was exported to the online software *EndNote Web*, for storage and organization, being the initial step in selecting the corpus for this study. In the VHL database, an advanced search was carried out, for this reason, the descriptors used are in the three languages.

Table 1. Sources of information, search strategies, and results of identified articles.

Sources of information	Search strategies	Results
MEDLINE/Pubmed	*("occupational therapist" OR "occupational therapy") AND ("accidental falls" OR "falls") AND ("aged" OR "elderly" OR "older adults") AND ("home")*	94
Web of Science	*(TS=("occupational therapy") OR TS=("occupational therapist")) AND (TS=("accidental falls") OR TS=("falls")) AND (TS=("older adults") OR TS=("aged") OR TS=("elderly")) AND (TS=("Home"))*	48
Embase	*('occupational therapy':ti,ab,kw OR 'occupational therapist':ti,ab,kw) AND (falls:ti,ab,kw OR falling:ti,ab,kw) AND (aged:ti,ab,kw OR 'older adults':ti,ab,kw) AND home*	39
BVS	(Terapia Ocupacional) OR (*Occupational Therapy*) AND (Acidentes por Quedas) OR (*Accidental Falls*) OR (*Accidentes por Caídas*) AND (Idoso) OR (Idosos) OR (*Aged*) OR (*Anciano*) AND (casa) OR (*home*)	81
CINAHL	*("occupational therapist" OR "occupational therapy") AND ("accidental falls" OR "falls" OR "falling") AND ("aged" OR "older adults") AND ("home")*	22
Scopus	*(TITLE-ABS-KEY ("Occupational Therapy") OR TITLE-ABS-KEY ("Occupational therapist") AND TITLE-ABS-KEY ("accidental falls") OR TITLE-ABS-KEY (falls) AND TITLE-ABS-KEY (aged) OR TITLE-ABS-KEY ("older adults") AND TITLE-ABS-KEY (home)*	90
	Total article search	374

Initially, articles were selected by reading the title, abstract and keywords according to the inclusion and exclusion criteria; then, the entire text was read to determine the formation of the study corpus. It should be noted that the PRISMA methodology was used to structure and analyze the results. Figure 1 explains the representation of the study corpus selection process in its stages:

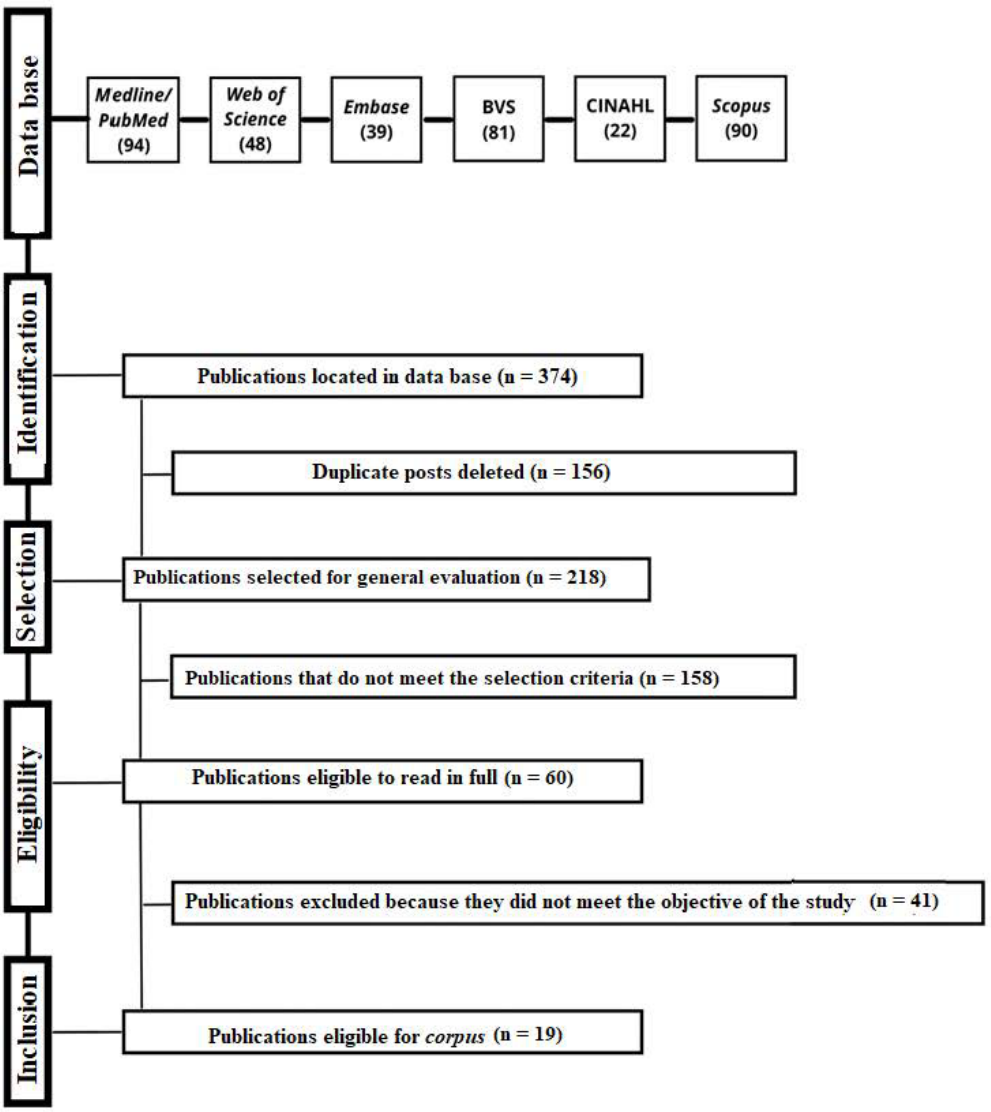

Figure 1. *Corpus* identification and selection flowchart.

The total number of documents identified was 374; of these, 156 were eliminated because they were duplicates. Of the 218 documents selected for reading title, abstract and keywords, 60 relevant publications remained for individual analysis and full reading, which were analyzed using pre-defined criteria. Thus, the research corpus consisted of 19 articles.

Results

The 19 articles that made up the study corpus were in line with the proposed objective: to identify intervention actions and strategies used in occupational therapy to prevent falls in elderly people at home. Information about the title, authors, year, periodical and country of publication is shown in Table 2.

Table 2. General categorization of articles included in the review.

Author(s)	Title	Year	Journal	Country of study
Arthanat et al. (2019)	*Profiles and Predictors of Smart Home Technology Adoption by Older Adults*	2018	*OTJR: Occupational Therapy Journal of Research*	USA
Blain et al. (2019)	*Effectiveness of a programme delivered in a falls clinic in preventing serious injuries in high-risk older adults: A pre- and post-intervention study*	2019	*Maturitas*	France
Cockayne et al. (2018)	*Can occupational therapist-led home environmental assessment prevent falls in older people? A modified cohort randomised controlled trial protocol*	2018	*BMJ Open*	England
Granbom et al. (2019)	*Preventing falls among older fallers: study protocol for a two-phase pilot study of the multicomponent LIVE LiFE program*	2019	*Trials*	USA
Hamm et al. (2019c)	*Mobile three-dimensional visualisation technologies for clinician-led fall prevention assessments*	2019	*Health Informatics Journal*	UK
Hamm et al. (2017)	*Fall Prevention Self-Assessments Via Mobile 3D Visualization Technologies: Community Dwelling Older Adults' Perceptions of Opportunities and Challenges*	2017	*JMIR Human Factors*	UK
Hamm et al. (2019a)	*Enabling older adults to carry out paperless falls-risk self-assessments using guidetomeasure-3D: A mixed methods study*	2019	*Journal of Biomedical Informatics*	UK
Hamm et al. (2019b)	*Guidetomeasure-OT: A mobile 3D application to improve the accuracy, consistency, and efficiency of clinician-led home-based falls-risk assessments*	2019	*International Journal of Medical Informatics*	UK
Hasegawa & Kamimura (2018)	*Development of the Japanese version of the Westmead Home Safety Assessment for the elderly in Japan*	2018	*Hong Kong Journal of Occupational Therapy*	Japan

Table 2. Continued...

Author(s)	Title	Year	Journal	Country of study
Lo Bianco et al. (2020)	*"I think I could have designed it better, but I didn't think that it was my place": a critical review of home modification practices from the perspectives of health and of design*	2020	*Disability and Rehabilitation: Assistive Technology*	Australia
Mackenzie (2017)	*Evaluation of the clinical utility of the Home Falls and Accidents Screening Tool (HOME FAST)*	2017	*Disability and Rehabilitation*	UK, Canada and Australia
Maggi et al. (2018)	*Fall determinants and home modifications by occupational therapists to prevent falls*	2018	*Canadian Journal of Occupational Therapy*	Belgium
Müller et al. (2021a)	*Development of a lifestyle-integrated physical exercise training and home modification intervention for older people living in a community with a risk of falling (Part 1): the FIT-at-Home fall prevention program*	2019	*Disability and Rehabilitation*	Germany
Müller et al. (2021b)	*A feasibility study of a home-based lifestyle-integrated physical exercise training and home modification for community-living older people (Part 2): the FIT-at-Home fall prevention program*	2019	*Disability and Rehabilitation*	Germany
Nakamura-Thomas et al. (2019)	*Japanese Community-Living Older Adults' Perceptions and Solutions Regarding Their Physical Home Environments*	2018	*Home Health Care Management & Practice*	Japan
Paiva et al. (2017)	*Avaliação das características das quedas entre idosos residentes em Uberaba, Minas Gerais*	2017	Revista de Enfermagem e Atenção à Saúde	Brazil
Stark et al. (2017b)	*Protocol for the home hazards removal program (HARP) study: a pragmatic, randomized clinical trial and implementation study*	2017	*BMC Geriatrics*	USA
Stark et al. (2018)	*Feasibility Trial of Tailored Home Modifications: Process Outcomes*	2018	*The American Journal of Occupational Therapy*	USA
Stark et al. (2021)	*Home Hazard Removal to Reduce Falls Among Community-Dwelling Older Adults: A Randomized Clinical Trial*	2021	*JAMA Network Open*	USA

The highest percentage of publications was in 2019, with seven articles (36.84%), followed by 2018, with six (31.58%), 2017, with four (21.05%), 2020 and 2021 with one article each year (5.26%). No publications were found that met the search criteria

in the year 2022, considering that the search date only tracked publications from the first six months of the year.

Regarding the countries with the highest prevalence identified in this study, the United States and the United Kingdom stand out, where five studies were published and, in contrast, Brazil, where only one study was identified.

Most articles presented limitations related to reporting bias (32%), sample and data collection (26%), participant selection (21%) and problems in the effectiveness of the protocol applied in the study (37%). Regarding suggestions for future research, 63% of the articles suggested the need for more studies related to the topic.

Of the articles analyzed, eight reported single-component interventions for fall prevention, such as exercise intervention (Blain et al., 2019) and environmental adaptation (Cockayne et al., 2018; Lo Bianco et al., 2020; Maggi et al., 2018; Paiva et al., 2017; Stark et al., 2017b, 2018, 2021).

Four of the studies referred to multicomponent interventions for fall prevention, which integrated aspects of individual and comprehensive assessment, environmental adaptations, physical exercise training/programs integrated with Activities of Daily Living (ADL) and educational components (Granbom et al., 2019; Müller et al., 2021a, 2021b; Nakamura-Thomas et al., 2019). Five studies presented technologies to assist professional practice (Arthanat et al., 2019; Hamm et al., 2017, 2019a, 2019b, 2019c). Furthermore, two studies presented validation and usefulness of assessment instruments that can be used by occupational therapists to assess the safety of the home environment (Hasegawa & Kamimura, 2018; Mackenzie, 2017), one of which can also be used by other professionals (Mackenzie, 2017).

Among the articles analyzed, one presented a single-component intervention program with a multidisciplinary team, including the occupational therapist (Blain et al., 2019), three cited the importance of monitoring with multidisciplinary teams to prevent falls and directed the discussion for the actions of the occupational therapist (Granbom et al., 2019; Lo Bianco et al., 2020; Paiva et al., 2017).

After analysis, the actions carried out by the occupational therapist to prevent falls in elderly people living at home were highlighted. Such actions were categorized into assessment instruments/measures, functional training integrated into ADL, environmental adjustments and modifications, educational actions, in addition to the use of technological tools and assistive devices.

The categorization of the assessments identified in the articles analyzed aimed at preventing falls at home is shown in Table 3. It is evident that the assessment measures/instruments used in the studies assess intrinsic and extrinsic risk factors, with the aim of measuring different associated variables the risk of falls.

The assessments used included measures/instruments to evaluate the environment, the person's factors and ADL and IADL occupations, in addition to seeking to understand the physical home environment and its furnishings. In the assessments, the elderly people's behaviors, lifestyle, history of falls and fear of falling were considered, as well as deficiencies in bodily functions and their impacts on participation and engagement in ADL. Some of the actions that can be carried out by the occupational therapist are described in the articles and are organized in Table 4.

Table 3. Categorization of the assessment measures/instruments used.

Assessments		Author(s)	Purpose of assessment
Assessment of the home environment and risk of falling	Non-standardized assessment	Paiva et al. (2017)	Identify environmental barriers and facilitators.
		Lo Bianco et al. (2020)	Detect environmental risk factors.
		Cockayne et al. (2018)	Identify the history of falls, lifestyle, use of home environments, risk behaviors and prevention strategies adopted.
	Westmead Home Safety Assessment (WeSHA)	Stark et al. (2017a, 2021), Cockayne et al. (2018), Hasegawa & Kamimura (2018)	Assess home safety and identify environmental hazards in areas of the home with a standardized checklist.
	Home Falls and Accidents Screening Tool (HOME FAST)*	Mackenzie (2017)	Identify elderly people at greater risk of falling due to domestic of household factors.
	Home Safety Self-Assessment Tool (HSSAT)*	Granbom et al. (2019)	Assess home risks, including entry areas, hallways, living room, kitchen, bathroom, bedroom, basement/laundry, room, stairs and garage.
	Housing Enabler	Müller et al. (2021a)	Examine the home environment and identify risk factors and accessibility issues.
	Home environment falls-risk assessment process (HEFAP)	Hamm et al. (2019a, 2019b)	Assess the risk of falling in the home environment, collecting information on functional ability, client measurements, furniture, and accessories, to prescribe assistive devices and maintain safety.
		Hamm et al. (2019a, 2019b)	Enable self-assessment, through the *Guigetomeasure-3D* application, of environmental and person measurements for the prescription of assistive technologies.
		Hamm et al. (2017, 2019c)	Evaluate, through the interactive and functional 3D-MAP application, the furniture, environment, and physical structures of the elderly person to prescribe assistive technologies.
Assessment of functions and/or abilities of the elderly person.	*Occupational Self-Assessment* (OSA)*	Nakamura-Thomas et al. (2019)	Enable client self-assessment, involving the areas of participation and performance.
	Questionário de avaliação funcional multidimensional*	Stark et al. (2018)	Identify losses and potential risks of falls in ADL and IADL
	Escala de Berg*	Hasegawa & Kamimura (2018)	Measure and assess balance and risk of falls
	Timed Up and Go (TUG)*	Cockayne et al. (2018), Blain et al. (2019), Granbom et al. (2019)	Assess mobility and risk of falling

Table 3. Continued...

Assessments		Author(s)	Purpose of assessment
	Avaliação da Mobilidade Orientada para o Desempenho (POMA)*	Stark et al. (2017a, 2018, 2021)	Assess Mobility, gait and balance.
	Mini Exame de Estado Mental (MEEM)*	Paiva et al. (2017), Stark et al. (2017a), Blain et al. (2019)	Assess cognitive function.
	Short Blessed Test (SBT)	Stark et al. (2017a)	Assess for severe cognitive impairment.
	Visual exams	Stark et al. (2017a), Granbom et al. (2019)	Measure binocular contrast sensitivity
		Maggi et al. (2018)	Assess vision problems that increase the risk of falling
Geriatric assessment	*Geriatric Depression Scale Short Form* (GDSSF)*	Stark et al. (2021)	Assess depression scores, including risk of falling.
	InterRAI Home Care	Maggi et al. (2018)	Evaluate domains related to the health of the elderly (cognition, health status, functional, dental, and skin condition, and informal support.
Assessment of quality of life	*Short Form Survey* (SF-36)*	Stark et al. (2017a, 2021)	Assess health-related quality of life, identifying aspects that predict falls.
	Euroquool 5Q-5D-5L*	Cockayne et al. (2018), Granbom et al. (2019)	
	Older Americans Resources and Services (OARS)*	Stark et al. (2017a, 2021)	Track the person's functional performance in ADL and IADL
Assessment of fear of falling	*Falls Efficacy Scale* (FES-I, FES, FES-ISF-36)*	Stark et al. (2017a, 2021), Nakamura-Thomas et al. (2019), Granbom et al. (2019)	Assess the individual's effectiveness, performance and confidence in carrying out ADL and IADL, and the fear of falling.
Assessment of ADL and IADL	Índice de Katz*	Granbom et al. (2019)	Assess difficulties and performance in ADL.

*Standardized assessments validated for the Brazilian context.

Table 4. Categorization of fall prevention actions carried out by the occupational therapist.

Interventions	Author(s)	Action details
Functional training integrated into ADL	Nakamura-Thomas et al. (2019), Blain et al. (2019)	Intervene through functional exercise training to prevent falls, reduce fear if falling and maintain performance in ADL
	Müller et al. (2021a, 2021b), Granbom et al. (2019)	Incorporate functional balance and strength exercises of the upper and lower limbs into the ALD and lifestyle of elderly people at risk of falls, with the aim of improving mobility skills and participation in ADL.
Organization of the internal and external environment	Mackenzie (2017), Cockayne et al. (2018),	Reduce clutter in the house by removing scattered objects (toys, shoes, objects, wires scattered across

Table 4. Continued...

Interventions	Author(s)	Action details
	Paiva et al. (2017), Nakamura-Thomas et al. (2019), Hasegawa & Kamimura (2018), Hamm et al. (2019c), Müller et al. (2021a)	the floor), and fix or remove rugs from the rooms, using suction cups, rubberized and non-slip rugs.
	Mackenzie (2017), Maggi et al. (2018)	Facilitate access to and use of equipment such as telephones and light switches.
	Mackenzie (2017)	Make using the bathroom easier, avoiding risks (facilitate towel accessibility, water temperature, practice getting in and out of the shower/bathtub).
	Mackenzie (2017)	Keep enough space Around the bed for mobility and light switches within easy reach of the bed.
Modifications to home security in indoor and outdoor environments.	Stark et al. (2021), Müller et al. (2021a), Granbom et al. (2019), Hamm et al. (2019b), Nakamura-Thomas et al. (2019), Paiva et al. (2017)	Propose the installation of assistive devices, such as: support bars/handrails and non-slip coating.
	Cockayne et al. (2018), Maggi et al. (2018), Paiva et al. (2017), Hamm et al. (2019c), Mackenzie (2017)	Remove environmental hazards such as slippery and uneven floors.
	Mackenzie (2017), Maggi et al. (2018)	Modify the location, height of furniture, and width of the stairs.
	Mackenzie (2017)	Advise on adjustments to slopes and uneven floors.
	Paiva et al. (2017), Granbom et al. (2019), Mackenzie (2017), Maggi et al. (2018), Nakamura-Thomas et al. (2019), Hamm et al. (2019c), Stark et al. (2021)	Enable maintenance of adequate lighting in all home environments, including night lights, fluorescent strips, night light intensity and number of lights.
	Stark et al. (2018), Lo Bianco et al. (2020)	Modify the home environment to decrease ADL limitations, provide environmental support for functional impairments, and maximize control over the environment.
Rest and sleep care	Maggi et al. (2018)	Intervene in sleep problems when necessary.
ADL training	Stark et al. (2018)	Train ADL with the use of environmental modifications and assistive equipment, encouraging problem solving to complete activities safely.
	Paiva et al. (2017)	Practice ADL to reduce fear of falling.
Guidelines on environmental safety.	Mackenzie (2017)	Provide guidance on animal behavior and risk situations for falls.
	Cockayne et al. (2018), Maggi et al. (2018)	Provide guidance on the risks of falls present in environment and propose solutions.

Table 4. Continued...

Interventions	Author(s)	Action details
Personal safety guidelines	Nakamura-Thomas et al. (2019), Paiva et al. (2017), Stark et al. (2021)	Provide guidance on risk behaviors when carrying out occupations in different areas of the home.
	Nakamura-Thomas et al. (2019), Hasegawa & Kamimura (2018)	Advise on the use of appropriate footwear.
	Cockayne et al. (2018), Maggi et al. (2018)	Provide guidance on risky behaviors.
Health education actions	Cockayne et al. (2018)	Offer care leaflets to prevent falls
	Stark et al. (2017a), Paiva et al. (2017)	Address the risk factors for falls present in the home environment and self-management strategies and adaptation of heavier to prevent the occurrence of falls.
Family/caregiver participation	Cockayne et al. (2018), Blain et al. (2019), Maggi et al. (2018)	Involve Family participation in the data collection process, modifications to the home environment and care for the caregiver's health.
Client participation	Cockayne et al. (2018)	Involve the cliente in identifying solutions and developing a list of home modification recommendations.
	Maggi et al. (2018)	Identify the customer's emotional state and desires.
	Nakamura-Thomas et al. (2019), Müller et al. (2021a), Lo Bianco et al. (2020)	Center the intervention on the client, their desires, needs and occupational performance to maintain motivation, engagement and shared decision-making in the service.
	Hamm et al. (2019c)	Identify intrinsic risk factors for providing assistive equipment.
Assistive equipment	Hamm et al. (2017, 2019c)	Identify and reduce barriers that affect the performance of ADL and the intrinsic and extrinsic risk factors for falls, through the provision of assistive equipment to maintain independence in performing ADL and aging in place.
	Nakamura-Thomas et al. (2019), Cockayne et al. (2018), Maggi et al. (2018), Hamm et al. (2019a, 2019c)	Recommend the use of assistive devices such as bath boards, walkers, installation of handrails and grab bars in domestic environments, toilet lifts and chairs.
	Hamm et al. (2019c)	Provide guidance on correct use or prescribe assistive equipment
	Stark et al. (2017a, 2018, 2021), Maggi et al. (2018), Lo Bianco et al. (2020)	Provide guidance on prescribed modifications to the home environment, how to use the environment safely and efficiently, and training in the use of assistive equipment installed to maintain safety in the environment.
Environmental control systems	Mackenzie (2017)	Indicate the installation of smoke detectors, fall alarms, and the installation of sensor-activated lighting.
	Arthanat et al. (2019)	Suggest the installation of smart home technology to maintain safety, facilitate health management and occupational independence.
	Nakamura-Thomas et al. (2019)	Prescribe lighting sensor systems.

Table 4. Continued...

Interventions	Author(s)	Action details
Smart Technologies for assessment in professional practice	Hamm et al. (2019a, 2019b)	*Guidetomeasure*-OT: Facilitate the evaluation and collection of measurements, to provide efficient and effective assistive equipment through the mobile application.
	Hamm et al. (2017, 2019c)	3D-MAP: Facilitate the evaluation and collection of measurements of the environment and the person to provide assistive equipment, through a mobile application for visualization, interaction and control of the environment.
Programs	Stark et al. (2017a, 2021)	*Home Hazard Removal Program* (HARP): remove home hazards through comprehensive assessment of the individual, behaviors and environment develop a home hazard removal and remediation plan (through home repairs, adaptive equipment, task modification, and education). The program includes shared decision-making, self-management, and motivational improvement strategies.
	Müller et al. (2021a, 2021b)	Fall prevention program *Fit-at-Home:* improve strength, balance and safety at home, preventing falls through the progressive physical exercise training program integrated into activities and with home modification intervention.
	Granbom et al. (2019)	Falls prevention program – LIVE-LiFE: prevent falls through a multicomponent program based on lifestyle and home changes, including goal clarification, balance and strength training integrated into daily habits, home safety assessment, removal of domestic dangers, vision examination, and medication review.

As seen in Table 4, the prevention of falls at home was seen from different angles and is aimed at the interaction between the person, the environment, the occupation and their support network, treated through complementary strategies and the implementation of structured fall management programs. single component or multicomponent.

The care offered by the occupational therapist was based on individualized strategies, with shared decision-making and focusing on occupational performance in ADL. The main strategies involved the assessment of the environment and the elderly person, training in functional exercises integrated into ADL, organization, modifications and adaptations in the internal and external environment, guidance to the client and their support network, health education actions, provision of assistive equipment, activity training and use of intelligent technologies, supporting professional practice.

Discussion

The results of this integrative review present the most recent scientific evidence of actions, interventions and strategies used in professional practice to maintain safety, reduce risk factors, prevent falls in elderly people at home and to support aging in their life context.

In the studies analyzed, the occupational therapist working in the home context aims to reduce barriers and risk factors arising from the interaction between the environment,

the person and the occupation that interfere with occupational performance. This allows people to participate in their activities and their aging in the family environment, reinforcing the need to base actions, interventions and strategies on scientific evidence (Blaylock & Vogtle, 2017) to assist in the clinical decision-making process, i.e., in the appropriate selection of the assessment, care plan, removal and adaptation of household hazards (American Occupational Therapy Association, 2020).

Assessments are essential for the practice of occupational therapy, in addition to promoting understanding of the elderly person's life context. Different assessment instruments were addressed in studies to evaluate the home environment, person factors and occupations, which reinforces the need for this stage in the occupational therapist's repertoire of actions to prevent falls in elderly people at home. Other studies reaffirm that the intervention process begins by evaluating the person's factors, the home environment and activities (Keglovits et al., 2020; Stark et al., 2017a). It is essential to assess the functional capacity, performance skills and independence of older people in ADL, considering the risk of falling to conduct effective interventions (Barbosa, 2018; Hughes et al., 2023).

The most cited assessments in the studies examined were standardized assessment instruments/measures, which are widely used due to their reliability and scientific validity, that is, they ensure that the information collected is reproduced in a consistent and accurate manner, contributing to the quality of the service offered (Souza et al., 2017).

Among the findings on the occupational therapy process, two types of interventions stand out with different characteristics regarding the professional's possibilities for action, namely: multicomponent intervention and single-component intervention. Single-component interventions are generally associated with one element, which may be: home safety assessment and modification, fall prevention education, or an exercise program (Miranda-Duro et al., 2021). Multicomponent interventions consist of individualized and comprehensive assessment, home modifications, home visits, educational components to prevent falls and functional training for balance, strength and mobility (Stark et al., 2017a; Blaylock & Vogtle, 2017; Miranda-Duro et al., 2021). It was identified that multicomponent assessments are more effective for preventing falls at home and reducing domestic risks (Stark et al., 2017a). From another perspective, Gillespie et al. (2012) found that multifactorial interventions reduce fall rates, however, they do not reduce the risk of falls, a concept that may differ in findings due to different intervention components, settings and health systems.

It was found that the functional exercise training approach integrated into ADL is relevant for preventing falls at home, mainly due to changes in lifestyle and addressing the intrinsic factors of the elderly (Miranda-Duro et al., 2021). Exercise interventions integrated into the lifestyle present long-term results and promote physical activity in this population (Opdenacker et al., 2008).

Another occupational therapist action identified was the strategy of modifying the home environment, which involves adaptations to the physical structure of the house, installation of assistance equipment, organization in the location of objects, repositioning of furniture, adaptation of internal environments and prescription of assistive devices. These are compensatory strategies used by occupational therapists to improve the occupational performance of older people (Stark et al., 2017a). Thus, home

interventions include task simplification, identification, removal, repair, and education about environmental factors (Lim et al., 2020).

The occupational therapist is the professional trained to identify potential barriers and facilitators in carrying out activities and provide guidance on environmental suitability to maximize independence, quality of life and permanence in the location (Lau et al., 2018). These objectives are in line with the premises of "*Ageing in Place*", a vision that establishes the ability of elderly people to live in their own home and community with safety, independence and comfort, regardless of extrinsic and intrinsic factors (World Health Organization, 2015; Vala et al., 2021).

Reflecting on practice, it becomes important to value the recognition of the occupational therapist as a professional who carries out effective environmental assessments and modifications with a focus on occupational performance. Thus, the occupational therapist must be able to communicate their role in the team, concepts used and the effectiveness of their intervention to prevent falls, sharing their knowledge with other professionals, colleagues, clients and their families (Pighills et al., 2019).

The recommendations offered by the occupational therapist were individualized and based on the personal skills, environmental characteristics and desires of the elderly, that is, all solutions are discussed with the client to reduce the impacts of changes in their daily lives. In accordance with Pighills et al. (2019) and Hughes et al. (2023), the occupational therapist uses the person-centered model, an approach that strengthens the empowerment of the client and their family, who exercise control and choice over their needs, that is, there is shared decision-making between professional and client.

The process of maintaining safety and preventing falls also involves educational actions, which include clarifications about the dangers present at home, self-management and risk behaviors when interacting with the environment. Furthermore, they include training older people and their caregivers on the safe use of environmental adaptations to reestablish habits and routines (Stark et al., 2017a). Health education is one of the main falls prevention practices (Brito et al., 2017) and a form of communication that conveys guidance in a concise manner (Castro et al., 2020).

The provision of assistive technologies and equipment, such as environmental control systems and smart technologies, facilitates the use of home environments and the assessment of occupational therapy. It is understood that the technologies are effective, customizable and centered on the elderly, which highlights the need to promote users' abilities to use them. Therefore, the use of technological resources allows elderly people to engage in activities in a functional way with safety, independence and autonomy, contributing to the maintenance of motor and cognitive functions, social interaction and quality of life (Martinez & Emmel, 2013) .

Assistive technologies integrated into falls reduction approaches may include health monitoring, electronic sensors, fall detection equipment, bedside alerts, pressure mats, and smoke or heat alarms (Miranda-Duro et al., 2021). The use of a smart home, for example, favors protection and safety, especially related to falls (Pietrzak et al., 2014).

3D measurement applications are accurate, efficient, consistent and interactive for evaluating the environment and person. Ninnis et al. (2018) measured the use of information and communication technologies in home assessments carried out by occupational therapists and realized that this use has the potential to improve the service due to its usability, ease and cost-benefit. However, they are little explored in clinical

practice, as they may present problems of being out of date, be inappropriate for specific populations or may harm the role of the occupational therapist, as professionals are more sensitive when identifying barriers imposed by the environment.

The programs for removing barriers at home and preventing falls presented in the studies analyzed are interventions used by occupational therapists and structured with a single or multicomponent component. The HARP program is characterized as a single-component intervention and presented favorable results when articulating environmental assessments and modifications. In the literature, no consensus was found on the benefits of single-component interventions. Elliott & Leland (2018) pointed out mixed results on effectiveness and reinforced the need for more studies on this intervention model. In contrast, Stark et al. (2017a) identified strong evidence of effectiveness of single-component interventions.

The *LIVE LiFE* and *Fit-at-Home* programs are based on a multicomponent intervention applied by the occupational therapist. These studies aimed to evaluate the reliability and scientific validity of a structured method for preventing falls. Previous studies found that multicomponent fall prevention programs, centered on the person and in the home context, were effective in improving occupational performance and reducing the number of falls, mainly associated with a multidisciplinary approach (Clemson et al., 2012; Szanton et al., 2014; Liu et al., 2021). However, no studies were found that evaluated the applicability, feasibility and scientific reliability of these programs for the Brazilian context.

Therefore, it is recommended that, in the practice of occupational therapists, fall prevention programs are used that include multicomponent strategies focused on the elderly, involving functional exercises integrated into the lifestyle, assessment and removal of domestic hazards and educational components for prevention of falls. A home intervention program must include the verification, removal and reduction of environmental barriers to be effective in-home safety and in reducing the number of falls in the home (Elliott & Leland, 2018; Stark et al., 2017a; Leland et al., 2022).

In general, there was a need to deepen the intervention method of actions related to functional training integrated into ADL, guidelines regarding personal and environmental care, patient and family/caregiver participation in the intervention process, educational actions focused on preventing falls and defining single-component and multi-component interventions, ensuring a more accurate understanding of the strategies used and the results obtained.

Finally, this study aimed to identify the national and international repertoire of occupational therapist actions to prevent falls at home, updating scientific evidence for the national context on the topic and increasing the quality of intervention in home care. Furthermore, the need for new research on the topic focused on the Brazilian context and for the development of programs compatible with the specificities of national culture was elucidated.

Conclusion

Home is the most likely place for falls to occur in older people. Preventing falls is a significant challenge for healthcare professionals and, in this context, the occupational therapist plays a fundamental role.

The occupational therapist's intervention includes aspects related to the elderly person, the environment and occupation, favoring the adoption of solutions to prevent falls at home, in order to favor their protagonism, independence, autonomy, occupational performance, interaction and social participation.

The results described in this work demonstrated that, in Brazil, publications on the subject are still incipient. Therefore, it is essential to enhance national scientific publications to promote and establish the profession's field of action in the care and prevention of falls among elderly people at home.

Therefore, it is recommended that additional research be carried out with more diverse and representative samples, including different age groups, cultures and health conditions.

References

American Occupational Therapy Association – AOTA. (2020). Occupational therapy practice framework: domain and process (4th ed.). *American Journal of Occupational Therapy*, *74*(2), 1-87.

Arthanat, S., Wilcox, J., & Macuch, M. (2019). Profiles and predictors of smart home technology adoption by older adults. *OTJR*, *39*(4), 247-256.

Barbosa, A. C. (2018). Prevenção de quedas em pessoas idosas. In L. D. Bernardo & T. M. Raymundo (Eds.), *Terapia ocupacional e gerontologia: interlocuções e práticas* (pp. 89-101). Curitiba: Appris.

Bárrios, M. J., Marques, R., & Fernandes, A. A. (2020). Envelhecer com saúde: estratégias de aging in place de uma população portuguesa com 65 anos ou mais. *Revista de Saude Publica*, *54*(129), 129.

Blain, H., Dabas, F., Mekhinini, S., Picot, M. C., Miot, S., Bousquet, J., Boubakri, C., Jaussent, A., & Bernard, P. L. (2019). Effectiveness of a programme delivered in a falls clinic in preventing serious injuries in high-risk older adults: A pre- and post-intervention study. *Maturitas*, *122*, 80-86.

Blaylock, S. E., & Vogtle, L. K. (2017). Falls prevention interventions for older adults with low vision: a scoping review. *Canadian Journal of Occupational Therapy*, *84*(3), 139-147.

Botelho, L. L. R., Cunha, C. C. A., & Macedo, M. (2011). O método da revisão integrativa nos estudos organizacionais. *Gestão e Sociedade*, *5*(11), 121-136.

Brasil. Ministério da Saúde. (2021). *Mortalidade.* Brasília: DATASUS. Recuperado em 9 de fevereiro de 2023, de http://tabnet.datasus.gov.br/cgi/deftohtm.exe?sim/cnv/obt10uf.def

Brito, P. K. H., Silva, F. C. V., Leandro, G. B., Amorim, J. K. D., & Freitas, F. F. Q. (2017). Educação em saúde e aplicação de instrumentos para avaliação do risco de quedas em idosos. In *Anais do V Congresso Internacional de Envelhecimento Humano*. Campina Grande: Realize Editora.

Castro, C. P. F., Arantes, P. M. M., & Souza, L. A. P. (2020). Uso de um aplicativo para a educação de idosos quanto à prevenção de quedas no domicílio. *Revista Saúde Digital e Tecnologias Educacionais*, *5*(2), 175-188.

Chippendale, T., Gentile, P. A., & James, M. K. (2017). Characteristics and consequences of falls among older adult trauma patients: considerations for injury prevention programs. *Australian Occupational Therapy Journal*, *64*(5), 350-357.

Clemson, L., Singh, M. A. F., Bundy, A., Cumming, R. G., Manollaras, K., O'Loughlin, P., & Black, D. (2012). Integration of balance and strength training into daily life activity to reduce rate of falls in older people (the LiFE study): randomised parallel trial. *BMJ*, *345*(1), e4547.

Cockayne, S., Pighills, A., Adamson, J., Fairhurst, C., Drummond, A., Hewitt, C., Rodgers, S., Ronaldson, S. J., Lamb, S. E., Crossland, S., Boyes, S., Gilbody, S., Relton, C., & Torgerson, D. J. (2018). Can occupational therapist-led home environmental assessment prevent falls in older people? A modified cohort randomised controlled trial protocol. *BMJ Open*, *8*(9), e022488.

Deandrea, S., Lucenteforte, E., Bravi, F., Foschi, R., La Vecchia, C., & Negri, E. (2010). Risk factors for falls in community-dwelling older people: a systematic review and meta-analysis. *Epidemiology*, *21*(5), 658-668.

Elliott, S., & Leland, N. E. (2018). Occupational therapy fall prevention interventions for community-dwelling older adults: a systematic review. *The American Journal of Occupational Therapy*, *72*(4), 7204190040p1.

Gasparotto, L. P. R., Falsarella, G. R., & Coimbra, A. M. V. (2014). As quedas no cenário da velhice: conceitos básicos e atualidades da pesquisa em saúde. *Revista Brasileira de Geriatria e Gerontologia*, *17*(1), 201-209.

Gillespie, L. D., Robertson, M. C., Gillespie, W. J., Sherrington, C., Gates, S., Clemson, L. M., & Lamb, S. E. (2012). Interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*, *2012*(9):CD007146.

Granbom, M., Clemson, L., Roberts, L., Hladek, M. D., Okoye, S. M., Liu, M., Felix, C., Roth, D. L., Gitlin, L. N., & Szanton, S. (2019). Preventing falls among older fallers: study protocol for a two-phase pilot study of the multicomponent LIVE LiFE program. *Trials*, *20*(1), 2-9.

Hamm, J., Money, A., & Atwal, A. (2017). Fall prevention self-assessments via mobile 3D visualization technologies: community dwelling older adults' perceptions of opportunities and challenges. *JMIR Human Factors*, *4*(2), e15.

Hamm, J., Money, A. G., & Atwal, A. (2019a). Enabling older adults to carry out paperless falls-risk self-assessments using guidetomeasure-3D: a mixed methods study. *Journal of Biomedical Informatics*, *92*, 103135.

Hamm, J., Money, A., & Atwal, A. (2019b). Guidetomeasure-OT: a mobile 3D application to improve the accuracy, consistency, and efficiency of clinician-led home-based falls-risk assessments. *International Journal of Medical Informatics*, *129*, 349-365.

Hamm, J., Money, A. G., Atwal, A., & Ghinea, G. (2019c). Mobile three-dimensional visualisation technologies for clinician-led fall prevention assessments. *Health Informatics Journal*, *25*(3), 788-810.

Hasegawa, A., & Kamimura, T. (2018). Development of the Japanese version of the Westmead Home Safety Assessment for the elderly in Japan. *Hong Kong Journal of Occupational Therapy*, *31*(1), 14-21.

Hughes, S., Murray, C. M., McMullen-Roach, S., & Berndt, A. (2023). A profile of practice: the occupational therapy process in community aged care in Australia. *Australian Occupational Therapy Journal*, *70*(3), 366-379.

Keglovits, M., Clemson, L., Hu, Y. L., Nguyen, A., Neff, A. J., Mandelbaum, C., Hudson, M., Williams, R., Silianoff, T., & Stark, S. (2020). A scoping review of fall hazards in the homes of older adults and development of a framework for assessment and intervention. *Australian Occupational Therapy Journal*, *67*(5), 470-478.

Lau, G. W. C., Yu, M. L., Brown, T., & Locke, C. (2018). Clients' perspectives of the effectiveness of home modification recommendations by occupational therapists. *Occupational Therapy in Health Care*, *32*(3), 230-250.

Leland, N. E., Lekovitch, C., Martínez, J., Rouch, S., Harding, P., & Wong, C. (2022). Optimizing post-acute care patient safety: a scoping review of multifactorial fall prevention interventions for older adults. *Journal of Applied Gerontology*, *41*(10), 2187-2196.

Lim, Y. M., Kim, H., & Cha, Y. J. (2020). Effects of environmental modification on activities of daily living, social participation and quality of life in the older adults: a meta-analysis of randomized controlled trials. *Disability and Rehabilitation. Assistive Technology*, *15*(2), 132-140.

Liu, M., Xue, Q. L., Gitlin, L. N., Wolff, J. L., Guralnik, J., Leff, B., & Szanton, S. L. (2021). Disability prevention program improves life-space and falls efficacy: a randomized controlled trial. *Journal of the American Geriatrics Society*, *69*(1), 85-90.

Lo Bianco, M., Layton, N., Renda, G., & McDonald, R. (2020). "I think I could have designed it better, but I didn't think that it was my place": a critical review of home modification practices from the

perspectives of health and of design. *Disability and Rehabilitation. Assistive Technology*, *15*(7), 781-788.

Mackenzie, L. (2017). Evaluation of the clinical utility of the Home Falls and Accidents Screening Tool (HOME FAST). *Disability and Rehabilitation*, *39*(15), 1489-1501.

Mackenzie, L., Lovarini, M., Price, T., Clemson, L., Tan, A., & O'Connor, C. (2018). An evaluation of the fall prevention practice of community-based occupational therapists working in primary care. *British Journal of Occupational Therapy*, *81*(8), 463-473.

Maggi, P., de Almeida Mello, J., Delye, S., Cès, S., Macq, J., Gosset, C., & Declercq, A. (2018). Fall determinants and home modifications by occupational therapists to prevent falls. *Canadian Journal of Occupational Therapy*, *85*(1), 79-87.

Martinez, L. B. A., & Emmel, M. L. G. (2013). Elaboração de um roteiro para avaliação do ambiente e do mobiliário no domicílio de idosos. *Revista de Terapia Ocupacional da Universidade de São Paulo*, *24*(1), 18-27.

Miranda, D. P., Santos, T. D., Santo, F. H. E., Pinho, C. L., & Barreto, E. A. (2019). Quedas em idosos em ambiente domiciliar: uma revisão integrativa. *Revista Enfermagem Atual In Derme*, *2017*(spe), 120-129.

Miranda-Duro, M. D. C., Nieto-Riveiro, L., Concheiro-Moscoso, P., Groba, B., Pousada, T., Canosa, N., & Pereira, J. (2021). Occupational therapy and the use of technology on older adult fall prevention: a scoping review. *International Journal of Environmental Research and Public Health*, *18*(2), 702.

Morsch, P., Myskiw, M., & Myskiw, J. C. (2016). A problematização da queda e a identificação dos fatores de risco na narrativa de idosos. *Ciência & Saúde Coletiva*, *21*(11), 3565-3574.

Müller, C., Lautenschläger, S., Dörge, C., & Voigt-Radloff, S. (2021a). Development of a lifestyle-integrated physical exercise training and home modification intervention for older people living in a community with a risk of falling (Part 1): the FIT-at-Home fall prevention program. *Disability and Rehabilitation*, *43*(10), 1367-1379.

Müller, C., Lautenschläger, S., Dörge, C., & Voigt-Radloff, S. (2021b). A feasibility study of a home-based lifestyle-integrated physical exercise training and home modification for community-living older people (Part 2): the FIT-at-Home fall prevention program. *Disability and Rehabilitation*, *43*(10), 1380-1390.

Nakamura-Thomas, H., Kyougoku, M., & Bonsaksen, T. (2019). Japanese community-living older adults' perceptions and solutions regarding their physical home environments. *Home Health Care Management & Practice*, *31*(1), 16-22.

National Institute for Health and Care Excellence – NICE. (2019). *2019 surveillance of falls in older people: assessing risk and prevention* (NICE guideline, No. CG161). London. Recuperado em 9 de fevereiro de 2023, de https://www.ncbi.nlm.nih.gov/books/NBK551819/

Ninnis, K., Van Den Berg, M., Lannin, N. A., George, S., & Laver, K. (2018). Information and communication technology use within occupational therapy home assessments: a scoping review. *British Journal of Occupational Therapy*, *82*(3), 141-152.

Opdenacker, J., Boen, F., Coorevits, N., & Delecluse, C. (2008). Effectiveness of a lifestyle intervention and a structured exercise intervention in older adults. *Preventive Medicine*, *46*(6), 518-524.

Organização Mundial da Saúde – OMS. (2010). *Relatório global da OMS sobre prevenção de quedas na velhice.* São Paulo: Secretaria do Estado da Saúde. Recuperado em 9 de fevereiro de 2023, de https://bvsms.saude.gov.br/bvs/publicacoes/relatorio_prevencao_quedas_velhice.pdf

Paiva, M. M., Nascimento, J. S., & Tavares, D. M. S. (2017). Avaliação das características das quedas entre idosos residentes em Uberaba, Minas Gerais. *Revista de Enfermagem e Atenção à Saúde*, *6*(1), 95-106.

Paraná. Secretária de Estado da Saúde. (2018). *Avaliação multidimensional do idoso.* Curitiba. Recuperado em 9 de fevereiro de 2023, de https://www.saude.pr.gov.br/sites/default/arquivos_restritos/files/documento/2020-04/avaliacaomultiddoidoso_2018_atualiz.pdf

Pietrzak, E., Cotea, C., & Pullman, S. (2014). Does smart home technology prevent falls in community-dwelling older adults: a literature review. *Informatics in Primary Care*, *21*(3), 105-112.

Pighills, A., Tynan, A., Furness, L., & Rawle, M. (2019). Occupational therapist led environmental assessment and modification to prevent falls: review of current practice in an Australian rural health service. *Australian Occupational Therapy Journal*, *66*(3), 347-361.

Romli, M. H., Tan, M. P., Mackenzie, L., Lovarini, M., Kamaruzzaman, S. B., & Clemson, L. (2018). Factors associated with home hazards: findings from the Malaysian Elders Longitudinal Research study. *Geriatrics & Gerontology International*, *18*(3), 387-395.

Royal College of Occupational Therapists – RCOT. (2020). *Occupational therapy in the prevention and management of falls in adults: practice guideline*. Londres: RCOT.

Sixsmith, A., & Sixsmith, J. (2008). Ageing in place in the United Kingdom. *Ageing International*, *32*(3), 219-235.

Souza, A. C., Alexandre, N. M. C., Guirardello, E. de B., Souza, A. C., Alexandre, N. M. C., & Guirardello, E. B. (2017). Propriedades psicométricas na avaliação de instrumentos: avaliação da confiabilidade e da validade. *Epidemiologia e Serviços de Saúde: Revista do Sistema Unico de Saúde do Brasil*, *26*(3), 649-659.

Stark, S., Keglovits, M., Arbesman, M., & Lieberman, D. (2017a). Effect of home modification interventions on the participation of community-dwelling adults with health conditions: a systematic review. *The American Journal of Occupational Therapy*, *71*(2), 7102290010p1.

Stark, S., Somerville, E., Keglovits, M., Conte, J., Li, M., Hu, Y. L., & Yan, Y. (2017b). Protocol for the home hazards removal program (HARP) study: a pragmatic, randomized clinical trial and implementation study. *BMC Geriatrics*, *17*(1), 90.

Stark, S., Somerville, E., Conte, J., Keglovits, M., Hu, Y. L., Carpenter, C., Hollingsworth, H., & Yan, Y. (2018). Feasibility trial of tailored home modifications: process outcomes. *The American Journal of Occupational Therapy*, *72*(1), 1-10.

Stark, S., Keglovits, M., Somerville, E., Hu, Y. L., Barker, A., Sykora, D., & Yan, Y. (2021). Home hazard removal to reduce falls among community-dwelling older adults: a randomized clinical trial. *JAMA Network Open*, *4*(8), e2122044.

Szanton, S. L., Wolff, J. W., Leff, B., Thorpe, R. J., Tanner, E. K., Boyd, C., Xue, Q., Guralnik, J., Bishai, D., & Gitlin, L. N. (2014). CAPABLE trial: a randomized controlled trial of nurse, occupational therapist and handyman to reduce disability among older adults: rationale and design. *Contemporary Clinical Trials*, *38*(1), 102-112.

Vala, J., Borges, G., Martins, M., Xavier, R., & Leão da Costa, M. (2021). Envelhecer em casa: contributos da terapia ocupacional. *Revista Interinstitucional Brasileira de Terapia Ocupacional*, *5*(3), 403-422.

World Health Organization – WHO. (2015). *Imagine tomorrow: report on the 2nd WHO global forum on innovation for ageing populations.* Geneva: WHO. Recuperado em 9 de fevereiro de 2023, de https://apps.who.int/iris/handle/10665/205288

Author's Contributions

Patricia Schuartz and Ana Laura Andrade Ferreira participated in all stages of preparing the article: conception of the text, organization of sources and/or analyses, writing and reviewing the text. Rosibeth del Carmen Muñoz Palm was responsible for guidance and review of the project and manuscript. Lilian Dias Bernardo and Taiuani Marquine Raymundo contributed to the final writing and review of the manuscript. All authors approved the final version of the text.

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