INTEGRATIVE REVIEW ARTICLE

SCIENTIFIC PRODUCTION ABOUT THE ENVIRONMENTAL RISK FACTORS FOR FALLS IN THE ELDERLY: INTEGRATIVE REVIEW
PRODUÇÃO CIENTÍFICA ACERCA DOS FATORES DE RISCO AMBIENTAIS PARA QUEDAS EM IDOSOS: REVISÃO INTEGRATIVA
PRODUCCIÓN CIENTÍFICA SOBRE LOS FACTORES DE RIESGO AMBIENTAL PARA LAS CAÍDAS EN EL ANCIANO: REVISIÓN INTEGRADORA

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ABSTRACT

Objective: to analyze the Brazilian production of nurses related to extrinsic risk factors for falling for the elderly. *Method:* integrative review conducted by the research question << *How is the production of knowledge of Brazilian nursing linked to extrinsic risk factors of accidents by falling of the elderly, with emphasis on environmental factors?* >> The source of search was the Lilacs and Scielo from 2003 to 2013. We used an textual analysis resulting in the categories << *characterization of the elderly and extrinsic risk factors for falling* >>, << *Nursing diagnosis risk of falling of the North American Nursing Diagnosis Association* >>. *Results:* the nursing production is related to environmental issues and the identification of nursing diagnosis. *Conclusion:* nurses need to prepare to identify environmental risk factors for the implementation of actions for prevention and specific intervention. *Descriptors:* Elderly; Accidental Falls; Risk Factors; Nursing.

RESUMO

Objetivo: analisar a produção brasileira de enfermeiros relacionada aos fatores de risco extrínsecos para quedas em idosos. *Método*: revisão Integrativa conduzida pela questão de pesquisa << *Como se apresenta a produção de conhecimento da enfermagem brasileira atrelada aos fatores de risco extrínsecos dos acidentes por quedas em idosos, com ênfase nos fatores ambientais?* >> A fonte de busca foi a Lilacs e a Scielo no período de 2003 a 2013. Utilizou-se análise textual que resultou nas categorias << *Caracterização dos idosos e fatores de risco extrínsecos para quedas* >>, << *Diagnósticos de enfermagem risco de quedas da North American Nursing Diagnosis Association* >>. *Resultados*: a produção da enfermagem relaciona-se às questões ambientais e a identificação de diagnóstico de enfermagem. *Conclusão*: os enfermeiros necessitam preparar-se para identificar os fatores de risco ambientais para a realização de ações de prevenção e de intervenção específicas. *Descritores*: Idoso; Acidentes por Quedas; Fatores de Risco; Enfermagem.

RESUMEN

Objetivo: analizar la producción brasileña de enfermería relacionados con factores de riesgo extrínsecos de caídas en las personas mayores. *Método:* revisión integrada llevada a cabo por la pregunta de investigación << *¿Cómo es la producción de conocimiento de la enfermería brasileña vinculada a factores de riesgo extrínsecos de accidentes por caídas en los ancianos, con énfasis en los factores ambientales?* >> La fuente de búsqueda fue la Lilacs y Scielo, de 2003 a 2013. Se utilizó el análisis textual que dio lugar a las categorías << *caracterización de los factores de riesgo mayores y extrínsecos para las caídas* >>, << *Diagnóstico del riesgo de enfermería cae el North American Nursing Diagnosis Association* >>. *Resultados:* la producción de enfermería está relacionada con las cuestiones ambientales y la identificación de los diagnósticos de enfermería. *Conclusión*: las enfermeras tienen que prepararse para identificar los factores de riesgo ambientales para la implementación de la prevención y la intervención de acciones específicas. *Descriptores:* Ancianos; Caídas Accidentales; Factores de Riesgo; Enfermería.

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INTRODUCTION

Population aging is no longer a mere statistical projection, but a reality experienced by most developed and developing countries. 1 The United Nations (UN) considers elderly individuals from 65 years in developed countries and 60 years, in developing countries. In Brazil, the National Policy for the Elderly (Law no. 8842, Art. 2) defends as elderly a person aged 60 and older.[2]

With the aging process, there may be multiple chronic diseases (NCD) and the wear of various systems, in a progressive and irreversible manner, which can lead to disability and can result in a physical and mental decline, leading to a higher risk of accidents among these, the fall.[3]

These falls have several impacts on the life of an elderly, which may include significant morbidity, mortality, functional impairment, recurrent hospitalizations, need for institutionalization and consumption of social and health services. In addition to the direct consequences of the fall as fractures, bruises among others, the elderly may restrict the activities due to pain, disability, fear of falling again, protective attitudes of family members and caregivers or even the advice of health professionals. Often the elderly are isolated and may have depression.[4]

Regarding the etiology, falls can be associated to intrinsic factors that can be defined as those related to the subject itself, which may have reduced function of the systems that make up the postural control, diseases, cognitive and behavioral disorders, with inability to maintain or regain balance when necessary. And the extrinsic factors have been those related to the physical environment, such as lighting, surface to walk, loose rugs and high or narrow steps. 5

The etiologic factors for falls permeate the environment in which this elderly is inserted and when the nurses in their practice incorporate knowledge about environment, its object, which is the care, becomes more comprehensive and integrative. So, this knowledge becomes crucial for the development of their practices from the understanding of the complex relationships vital human / environment to promote the health of individuals, the production of knowledge and the appropriateness of different activities from expanded strategies that contribute to improving the quality of life of human beings, in this case referring to the elderly in the environment they share with other individuals.[6]

Regarding the listed studies in the literature, in a survey conducted in Brasilia there was a group of independent and autonomous elderly women where most falls occurred at home, inside or outside (in the garden), in bathroom or kitchen (due to extrinsic factors such as exposure to a slippery floor), the rapid shifts to the bathroom (frequent urination and incontinence). Poorly lit environments are also cited as a level of risk increase factor. So at night the falls index is higher, and among those individuals who do not have good vision, the index also increases.[7]

The actions aimed at promoting the health of the elderly involves action on the social and environmental determinants of health aimed at improving the quality of life of the population, resulting in the strengthening of individual and collective capacity to deal with the multiplicity of determinants and conditioners of health-process and disease-care. As a result, the nurses needs to look at their practices with older people, to identify the factors that influence the mobility, whether they are physical, psychological, socio-cultural and environmental, in order that they can carry out their daily activities without risk of suffering injuries by falls. In this case, it is important to plan for the prevention of falls by involving caregivers, family members and health professionals. 6

To the occurrence of a realization of nursing actions to the health of the elderly there needs to be a analysis of the environmental risk factors that can lead this older person having an accident by falling, and for that actions are planned for this event. Therefore, in this article emerges the following research question: How is the production of knowledge of Brazilian nursing linked to extrinsic risk factors of accidents of falling in regards to the elderly, with emphasis on environmental factors?

OBJETIVE

● To analyze the Brazilian scientific production of nurses linked to extrinsic risk factors related to the environment for falling of the elderly.

METHOD

This is an integrative review as a methodological resource, operationalized by the following steps: Problem formulation, data collection, data evaluation, analysis and interpretation of the collected data and presentation of results 8.

The integrative review allows the targeting towards defining concepts, review of theories,

methodological analysis and provides important data that can be linked directly to professional or clinical practice 9. In the formulation of the problem we had as research question: How does the production of knowledge of Brazilian nursing presents itself when linked to extrinsic risk factors of accidents by falls in the elderly, with emphasis on environmental factors?

Data collection occurred in April and May 2013. Were accessed articles published from 2003 to 2013, considering that a decade of publication may present significant in production. This chronology was also chosen because there is still a shortage of studies on falling with focus on nursing. The articles are indexed in the Scientific Electronic Library Online (SciELO) and in the Latin American and Caribbean Health Sciences Literature (LILACS). The following in the summaries contained descriptors were used: fall accidents, nursing, elderly and risk factors, separated by the Boolean operator AND.

To collect data, the authors have developed and tested a tool, observing the following items: title of the publication, journal, year of publication, type of article, author(s) of objective of the study and focus on extrinsic risk factors for falls.

Ten articles available in Portuguese were located, considering the publication of Brazilian nurses from the approach to accidental falls in elderly and extrinsic risk factors.

Levels of evidence of the articles were analyzed using pre-established criteria, consisting of systematize the articles found in two categories, where category A indicates a low risk of bias; the work should meet at least six of the eight proposed following criteria: 1) studies using a representative sample of the general population; 2) clearly defined target audience; 3) respondents who have characteristics corresponding to the target population; 4) standardized assessment methods; 5) instruments that show reliability; 6) validated instruments; 7) Statistical analysis described; 8) appropriate confidence interval. The articles listed in category B need to meet four of the items, a moderate risk of bias.[10]

After reading the summaries in the search for approaches to the theme of accidents from falls and following inclusion criteria: Full text available online and in the Portuguese language and the causes and extrinsic factors to the risk of falls, seven publications are suited to the study and had the category A,

proposed by a reference author chosen by reference levels of evidence.

Data was analyzed by means of textual analysis, which uses for building the foundation all texts submitted to representing the multiplicity of worldviews of subjects concerning the phenomenon investigated. This method makes it possible to identify and isolate sets of content submitted to it, categorize these statements and produce texts in order to integrate description and interpretation 11. After analyzing the articles and reading, and by grouping based on the similarities, two categories were identified: Characterization of the elderly and extrinsic risk factors for falls; NANDA Nursing Diagnosis of falls risk. This way, we used, in this reflection, the authors who have brought contributions to issues concerning the environment.[11-2]

RESULTS

The results can be viewed by Figure 1, which shows the variables related to localized articles, namely: the publication title, journal, year of publication, type of article, author (s) and objective of the study.

The seven selected articles were included in the following journals: Revista Brasileira de Enfermagem (one article), Revista Mineira de Enfermagem (one article) Revista de Enfermagem da Escola Anna Nery (one article), Revista de Saúde Pública (one article), Revista de Enfermagem da USP (two articles) and Revista Gaúcha de Enfermagem (one article).

Regarding the type of publication were found two original articles, those with primary data and four research articles, among these revisions and others. The number of authors per article varied between three and seven, totaling twelve different authors, one of which is related to the authorship of more than one work.

As for the proposed objectives, it was revealed that most dealt with the identification of extrinsic risk for falls in the elderly, as well as the history and impact relating to the nursing diagnosis of falls risks. Note that one study is about falls in elderly stroke patients.

	Title	Periodic	Year	Type	Author (s)	Goal
I	Identificação do diagnóstico de enfermagem "risco de quedas em idosos com acidente vascular cerebral"	Revista Gaúcha de Enfermagem	2012	Original Article	Morais HCC Holanda GF Oliveira ARS Costa AGS Ximenes CMB Araujo TL	Check the presence of the nursing diagnosis (DE) Risk of falls with cerebrovascular accident (CVA)
II	Risco de quedas em idosos: revisão integrativa pelo diagnóstico da North American Nursing Diagnosis Association	Revista da Escola de Enfermagem da USP	2012	Review Article	Santos SSC, Silva ME, Pinho LB, Gautério DP, Pelzer MT, Silveira RS	Analyze the scientific production risk factors for falls of the elderly, from the diagnosis of the North American Nursing Diagnosis Association, the scientific literature of Brazilian and foreign, 2005-2010.
III	Avaliação do risco de quedas em idosos atendidos em Unidade Básica de Saúde	Revista da Escola de Enfermagem da USP	2012	Original Article	Pinho TAM Silva AO Tura LFR Moreira MAS Gurgel SN Smith AAF Bezerra VP	Assess the risk of falls in the elderly.
IV	Fatores desencadeantes de quedas no domicílio em uma comunidade de idosos	Cogitare Enfermagem	2007	Research	Lopes MCL Violin MR Lavagnoli AP Marcon SS	Identify the causes of more frequent falls in the elderly in their homes in a town in the northwestern region of Paraná.
V	Caracteristicas dos riscos para quedas entre idosos de uma unidade de saúde da família	REME – Revista Mineira de Enfermagem	2007	Research	Marin MJS Castilh NC Myazato JM Ribeiro PC Candido DV	Characterize the risks for falls among elderly people belonging to the area of range of a PSF of the city of Marilia, Sao Paulo, aiming at the establishment of individual and collective actions seeking to improve the quality of life of this population.
VI	Identificando os fatores relacionados ao diagnóstico de enfermagem "risco de quedas" entre idosos	Revista Brasileira de Enfermagem	2004	Research	Marin MJS Amaral FS Martins IB Bertassi VC	Identify the impact of factors related to the diagnosis of nursing risk for falls in a group of elderly residents in a micro area, belonging to the area of coverage of a Basic Health Unit
VII	Causas e consequências de quedas de idosos atendidos em hospital público	Revista de Saúde Pública	2004	Original Article	Fabrício SCC Rodrigues RAP, Costa Junior ML	Investigate the history of falls reported by older adults, identifying factors possibly related, as well as place of occurrence, causes and consequences

Figure 1. Variables used for the analysis of publications located, Brazil, in 2013.

It was found that all the articles describe the extrinsic risk factors related to falls in elderly adding environmental issues. Only one of the articles does not characterize the study subjects, since it consists of an integrative literature review. Two articles analyzed the records of falls; and two articles addressed the nursing diagnosis on risk of falls.

By analyzing the set of Brazilian scientific productions produced by nurses found in this article, were listed two categories to present the most significant findings that will be described below.

Characterization of the elderly and extrinsic risk factors for falls

In study I, III, IV, V, VI and VII with respect to the characterization of the elderly in the investigated identified items, it was observed that the age was centered between 60 to 96 years; and almost half of the elderly in the age group of 80-89 years; more than 56% of subjects were female. In addition, most of the elderly had incomplete primary education, all were retired and more than half reported having suffered some sort of fall in the past year.

As for extrinsic risk factors for falls related to environmental factors, the studies I, III, IV, VI and VII, showed that the fact of slipping in wet conditions predominated, and that most of these falls were in the bathroom and

kitchen. In addition, we identified several factors related to the environment that facilitated the occurrence of falls, such as carpets and wet floor. Other sites were also identified in the same predominance, like street/avenue, the patio/backyard, the bathroom and the entrance hall as more frequent sites of falls.

The study II, when performing an integrative review regarding factors related to the risk of falls, showed that the risk factors linked to the environment, in descending order of appearance frequency in the researched articles were: four on environment with furniture and objects/carpets spread on the floor; three on low light; one about the weather, when causing slippery conditions. However, most of the participants of the research reported to reside in places with low environmental risk factors for fall, with little furniture, properly lit, and non-slipping material on the bathroom floor.

◆ **Nursing Diagnosis NANDA falls risk**

Articles I, II and VI identified the ND falls risk as proposed by NANDA and was identified in all participants, since all had at least one factor of risk for the event. An average of 6.3 risk factors in the female population and 7 in the male population were identified. Among the significant factors, those who were perceived by 70% or more of the participants of both sexes were: decreased strength in the lower extremities, impaired physical mobility, walking difficulties, antihypertensive agents, impaired balance, age over 65 years and inhibitors of Angiotensin-Converting Enzyme (ACE).

DISCUSSION

Regarding the profile of the elderly identified in the located articles, this study relates to the previous study that demonstrated risk of fall in the age group of 80 to 89 years, plus the incidence of falls among older women is also higher for ages equal or above 80 years. Another issue relates to these occurrencies of falls is associated with postural instability, which is considered a characteristic of the aging process. In addition, the proportion of seniors who fell indoors increased with age, with 58% for up to 69 years, 62.9% for those between 70 and 79 years and 84.6% for those with 80 years or more.[13]

Faced with this situation, we see that environmental factors are those that provide greater risk of falls and, when associated with the physical characteristics of individuals are even more aggravating.[14] Nurses when orientating the elderly must indicate the risk of possibilities they are subject to, encourage environmental adaptation, and request their participation. It is also necessary to make them understand the needs and make choices to make a safe and comfortable environment, especially those who have difficulty walking, using a cane, crutches, wheelchair and need people to transfer them from one side to the other.[15] Therefore, to evaluate these factors associated with the environment there must be an apprehension of environmental knowledge to expand knowledge about the accidents from falls.

The environmental knowledge will overflow the field of scientific rationality and objectivity of knowledge conforming within a new theoretical rationality, which will immerse new conceptual strategies for understanding a sustainable world. This environmental knowledge will not only generate a more complex and objective knowledge, but new forms of subjectivity and political position relative to the world.[12]

With respect to risk factors for falls, environmental problems such as wet floor, loose rugs and the occurrence of falls from height were evident in the articles found in this review and go against a survey conducted on the identification of the nursing diagnosis risk of falling, where it was shown that all elderly participants had some degree of change in the balance and/or gait, thus showing that the reduced muscle strength in the lower extremities affects the ability to perform motor activities and adaptation to the environment, contributing for the occurrence of instability and falls.[16]

The problems related to the environment are all the more dangerous the greater the vulnerability of the elderly and their instability. In most events, the elderly do not fall for performing dangerous activities, but in the development of routine activities which they consider safe.[17] In view of this, environmental health must be valued by the nurse so that interventions are designed to act appropriately in routine issues of older people, thus reducing the risk of falls in these activities.

Environmental health will permeate the nurse's work field, given that environmental problems cause actions in the context where individuals are inserted, developing relations of adequacy and inadequacy. Contexts that are different ecosystem environments in which humans live.[12] Therefore, the environmental risk factors can be modified effectively if the nurse takes it as his task of promoting a safe environment, modifying

them, especially through home visit strategies and health education.

Health education needs to incorporate the complexity of the systemic interrelations of environmental issues, as well as the analysis of meanings, values and socio-cultural and environmental potential in order to build new and more complex interactions between men and nature in its various forms of expression.[18]

In view of this, we ask: How can nurses use environmental knowledge to perform interventions and strategies on the environment, making it safe for the elderly so that this respects their individuality and peculiarities? Environmental knowledge will be a guiding of nursing actions in the sense that it can not direct this knowledge only to the care mechanism, without regarding that the environment permeates this elderly as a whole, it is to be in full which is devoted care.

This thought should be constant and it is for nurses show their commitment to the practice of comprehensive care, especially in their practice with the elderly. For a cultural and environmental transformation a conversion is necessary, through a change of mental direction towards a new form of relational behavior. Therefore, you need to educate yourself taking into account the environmental emphasis of questions to learn new ways to care, thus learning along with the elderly, to deal with other living and non-living components that share the same space, thereby promoting environmental sustainability of the elderly.[19]

Promoting environmental sustainability does not happen only by theoretical discourses. This requires the formation of innovative or reinventing attitudes, able to discuss the different situations, or environment in which the human being is inserted in order to protect life in its various dimensions. It also requires strategies and/or new opportunities, socially responsible ones, from the integration of the contradictions and uncertainties of the present time.[20]

As identified in this integrative review, in another study [20] showed that 74.6% of the falls occurred in the household and about 36% through environment related problems, demonstrating the importance of adequacy of elderly housing for the prevention of falls. This situation occurs because, despite the familiarity with the environment, often, the elderly are faced with unsafe conditions as a step, carpet and wet floor. The decreased readiness due to self-confidence, brought about by the knowledge of the environment they live in, the attention is reduced, because the activities they perform are routine,

thereby accidents that could be avoided are causing the reduction of mobility or functional capacity.

In another study it was identified that the main factors that cause falls were related to environmental factors such as falling on a slippery surface, fumble with objects on the floor, bumping into other people, climbing objects to achieve something, fall from bed, problems with steps and others.[14]

Because of the issue described above, the educational activities for the prevention of falls for the elderly should be constant, focusing on the promotion and integral development, based on the circumstances and problems to the early identification of pathological changes, arguing with the senior about risk factors and intervene when necessary. For this reason, the guidelines and changes in the physical environment for the elimination of risk factors for falls should include the family, viewing it as part of the promotion process of physical and mental well-being of the elderly, including al the environmental knowledge as guiding these activities.[14]

The environmental knowledge will immerse as a process of revaluation of cultural identities, traditional practices and production processes of the population. Thus it will offer new perspectives for subjective reappropriation of reality, opening a dialogue between knowledge and know finding the traditional and the modern.[12]

Extrinsic risk factors for falls in the studies are related to the nursing diagnosis on risk for falls, NANDA. Nurses while orientating the elderly, must show the eminent risk opportunities, encourage environmental adaptation, requesting their participation. Thus will make them realize the needs and make choices to make safe and comfortable environment, especially for those who have difficulty walking, using a cane, crutches, wheelchair and need people to transfer them the space in which the older person lives and moves should be as free as possible of furniture and fixtures that could cause injury.[21] Therefore, these actions can be performed by nurses through the Nursing Process (NP), in it included the history, planning, implementation and evaluation of nursing, give emphasis to the development of nursing diagnoses, particularly those relating to the environment/context as a risk factor for accidents of falling by considering the environmental knowledge.

The environmental knowledge will represent the possibility of organizing scientific knowledge so that in practice,

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disciplinary fields do not interact with each other, but do establish themselves as constructs of the subject in everyday scientific practice, thus, the environmental knowledge leads to construction of new identities, new rationalities and new realities. Therefore, this will be the light that will illuminate a new pedagogy and educational processes for building a sustainable future.[12-3]

It is up to nurses to perform functional assessments for the elderly, mainly using the tools targeted to balance and gait, so that they can establish treatment plans suited to their needs. Along with these actions, they should perform the Nursing Process (NP), as an important tool for the systematization of their work process, emphasizing the prevention of falls in the elderly.[21]

CONCLUSION

The reviewed literature indicated that the production of knowledge of Brazilian nursing linked to extrinsic risk factors for falls in the elderly are related to the physical environment, present in the household and in the routine activities of these seniors.

The use of integrative review as methodology was adequate to achieve the goal and in that we managed to see an overview of the Brazilian scientific production of nurses about the extrinsic risk factors for accidents resulting from falls. Thus, the study may contribute to the production of research and knowledge in nursing, providing subsidies for the improvement of nursing knowledge as a profession and a science.

From the reflection performed on the main variables involved in the study and identifying two categories that guided the national publications, providing contributions to the understanding of accidents by falls in the elderly, for possible interventions.

Identifying environmental risk factors in the ND falls risk intervention enables the nurse to eliminate these factors and prevent fall events. Therefore, nurses, in their professional practice, should recognize the risk factors, and be able to minimize their effects through environmental knowledge, adopting appropriate interventions and evaluating the results obtained in the prevention of falls.

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