Fatores de risco de queda na pessoa com Acidente Vascular Cerebral

Factores de Riesgo de Caídas en Personas con Accidente Vascular Cerebral

Risk factors of falling in the person with Cerebrovascular Accident

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RESUMO

Introdução: O acidente vascular cerebral constitui uma das principais causas de incapacidade, provocando alterações que se manifestam numa restrição da funcionalidade da pessoa, contribuindo para um crescimento de quedas acidentais. A identificação de fatores de risco de queda por parte do Enfermeiro Especialista em Enfermagem de reabilitação é imperativa para evitar estes eventos.

Objetivo: Identificar fatores de risco de queda em pessoas com Acidente Vascular Cerebral.

Método: Revisão sistemática da literatura, com pesquisa na plataforma EBSCO Host®, na CINAHL e MEDLINE, no período de 1 a 31 de outubro de 2017. Utilizou-se a seguinte equação de pesquisa, (Accidental Falls) AND (Stroke) AND (Risk Factors).

Resultados: Obteve-se um total de 19 estudos e um total de 22 fatores de risco de queda, 12 dos quais presentes na Taxonomia NANDA-I.

Conclusões: Esta pesquisa permitiu identificar fatores de risco de queda na pessoa com AVC. Este estudo constitui um contributo ao desenvolvimento do conhecimento da disciplina de Enfermagem, e que tem implicações na prática clínica, na educação e em novas pesquisas numa área sensível aos cuidados de enfermagem.

Descritores: Acidente Vascular Cerebral; Acidentes por Quedas; Fatores de Risco.

RESUMEN

Introducción: El accidente cerebrovascular es una de las principales causas de discapacidad, provocando cambios que se manifiestan en una restricción de la funcionalidad de la persona, contribuyendo a un aumento de las caídas accidentales. La identificación de los factores de riesgo de caídas por parte de la enfermera especialista en enfermería de rehabilitación es imprescindible para evitar estos eventos.

Objetivo: Identificar los factores de riesgo de caídas en personas con accidente cerebrovascular.

Método: Revisión sistemática de la literatura, con búsqueda en la plataforma EBSCO Host®, CINAHL y MEDLINE, del 1 al 31 de octubre de 2017. La siguiente ecuación de investigación, (Caídas accidentales) Y (Accidente cerebrovascular) Y (Factores de riesgo).

Resultados: se obtuvieron 19 estudios y un total de 22 factores de riesgo de caídas, 12 de los cuales estaban presentes en la taxonomía NANDA-I.

Conclusiones: Esta revisión nos permitió identificar factores de riesgo de caídas en personas con accidente cerebrovascular. Esta contribuye al desarrollo del conocimiento de la disciplina de enfermería y tiene implicaciones para la práctica clínica, la educación y la nueva investigación en un área sensible a la atención de enfermería.

Palabras clave: Accidente Cerebrovascular; Accidentes por Caídas; Factores de Riesgo

ABSTRACT

Background: Stroke is one of the main causes of disability, causing changes that are manifested in a restriction of the person's functionality, contributing to an increase of accidental falls. The identification of risk factors by the Specialist Nurse in Rehabilitation Nursing is imperative to avoid these events.

Objective: To identify risk factors for falls in people with stroke.

Methods: Systematic review of the literature, with research on EBSCO Host® platform, in CINAHL and MEDLINE, on the period between 1st and 31st of October 2017. The following research equation (Accidental Falls) AND (Stroke) AND (Risk Factors) was used.

Results: A sample of 19 studies and a total of 22 risk factors were obtained, 12 of which are present in the NANDA-I taxonomy.

Conclusions: This research allowed the identification of risk factors for stroke decline. This study contributes to the development of nursing discipline knowledge, and has implications for clinical practice, education and new research in a nursing care sensitive area.

Descriptors: Stroke; Accidental Falls; Risks Factors.

INTRODUCTION

The World Health Organization (WHO) states that cerebrovascular accident (CVA) is a disease clinically defined as a focal (or sometimes global) neurological impairment, of sudden occurrence and lasting more than 24 hours (or causing death) and with probable vascular origin[1]. According to the World Stroke Organization, in the last 25 years, stroke has become the second leading cause of death and disability in the world[2].

About 50% of patients who survive a stroke have limitations in activities of daily living, with the highest rates in the European Union[3].

This disease is a threat to the health and well-being of the person, not only because of its high incidence, but also because of the high mortality and morbidity rate[4], which can lead to changes in functionality, impacting not only in Activities of Daily Living (ADL), as in social integration, which can compromise the quality of life.

The limitations caused by stroke can originate other consequences, not only due to the decrease in mobility, but also the consequent worsening of the state of dependence and the risks associated with these changes. In this follow-up, the risk of falling becomes a relevant issue to be considered in the person with a stroke.

Fallings is the underlying cause of about 10 to 15% of all episodes that occur in emergency services[4]. They have a heavy economic impact on families, the community and society, in addition to being able to lead to states of dependency, loss of autonomy, confusion, immobilization and depression, which lead to various restrictions on daily activities. In Portugal, according to data from the national incident reporting system, 21% of all reported incidents are incidents related to falls[4].

The International Classification for Nursing Practice (ICNP) presents the concept of falling as a nursing focus and defines it as "descent of the body from a higher level to a lower level due to imbalance, fainting or inability to support weights and remain vertically", which translates as "by the event or episode - Falling" [5].

In turn, NANDA-International (NANDA-I) defines the Nursing Diagnosis, Risk of falls, as "increased susceptibility to falls that can cause physical harm and compromise health" [6] . The risk factors described for it include those related to the environment, cognitive and physiological status of patients, as well as those related to medication[6].

For the clinical practice of the Rehabilitation Nurse (RN) to the person with a stroke, an assessment of the risk of falling is essential, based on the multifactorial nature of this event. It is desirable to use standardized classifications and languages, which represent current knowledge. In this way, the nurse with relevant information for an accurate diagnosis can intervene properly, obtaining positive gains in health of the person with a stroke.

Scientific evidence is essential RN[4]. For the systematic review of the literature, we started from the following guiding question: "What are the risk factors for falls in people with cerebrovascular accident?". This identification allows the RN to early identify and act on the identified risk factors. Nurses, when caring for people with neurological damage, develop activities that promote the maximization of their functional capacities, promoting better motor performance, enhancing performance and personal development, minimizing the risk of falling.

This systematic review aims to identify the risk factors for falls in people with stroke.

MATERIALS AND METHODS

Scientific investigation is carried out with the objective of validating already established knowledge and producing new knowledge that, directly or indirectly, influence practice[7].

This review implies in the entire process, the reliability of the information of the consulted articles. In this sense, a rigorous research methodology was used, taking care to make the reference in an adequate way, as well as the integrity in the treatment and presentation of the data. Systematic Literature Review (SLR) allows the identification, selection and rigorous evaluation of a set of studies in order to extract the best scientific evidence to answer a research question. Its purpose is to gather all the empirical evidence through the application of systematic and explicit methods, in order to minimize biases, allowing for more reliable results, thus drawing more adequate conclusions[8].

A systematic literature review was carried out, as it is a careful process, which allows the identification, evaluation and interpretation of all available and relevant research, in order to answer a question that

arises in the context of clinical practice. The fundamental elements of a systematic review consist of 8 steps: research question, problem definition, systematic review objectives; inclusion and exclusion criteria; search strategy; selection procedure; data extraction procedure; and procedure for evaluating the methodological quality of selected studies[9].

This SLR aims to identify the risk factors for falls in people with stroke. The following research question was used: *What are the risk factors for falls in people with stroke?*

To formulate the research question, the recommendations of the Joanna Briggs Institute (JBI) were considered through the PEO strategy (Population = people with stroke, Exposure = Risk of falling, Outcome = related factors).

In addition to the criteria defined by the research question and by the PEO strategy, the following inclusion criteria were defined for the search of articles in the databases: studies in Portuguese and English, available in full text, published between January 2012 and December 2017 and studies with a high level of scientific evidence such as experimental, quasi-experimental, cohort and/or descriptive quantitative designs. As an exclusion criterion, articles that associated risk of falling with pathologies other than stroke.

The electronic search took place from October 1st to 31st, 2017, using the EBSCO Host® platform, in the CINAHL Complete and MEDLINE Complete databases, virtual library of the Escola Superior de Saúde Atlântica, B-On and Biblioteca Virtual em Saúde (BVS).

For the SLR, keywords and descriptors were used that allowed an objective search and facilitated the process of selecting the most appropriate articles for the research question. The descriptors were validated on the MeSH (Medical Subject Headings) and DeSC (Health Sciences Descriptors) platform, using the following keywords and descriptors:

AVC/Stroke AND queda acidental/ accidental falls AND risk factors/ fatores de risco.

The evaluation of the articles was carried out by two independent reviewers who compared their analysis and reached a consensus on the methodological quality of the studies.

Through the descriptors used, 508 scientific papers were identified in the BVS and EBSCO platform. After applying the inclusion and exclusion criteria, 61 articles were selected. The selection of articles started first by reading the title, followed by reading the abstract. After this selection, 24 articles were admitted. Subsequently, for data extraction, a table was used to exclude articles, according to the JBI criteria, depending on the type of study. These tables were applied to each article by two independent reviewers, and 19 articles were included in the systematic literature review for presenting at least 75% of the criteria. The PRISMA protocol was followed for the identification, selection, eligibility and inclusion process of studies. (Figure 1)
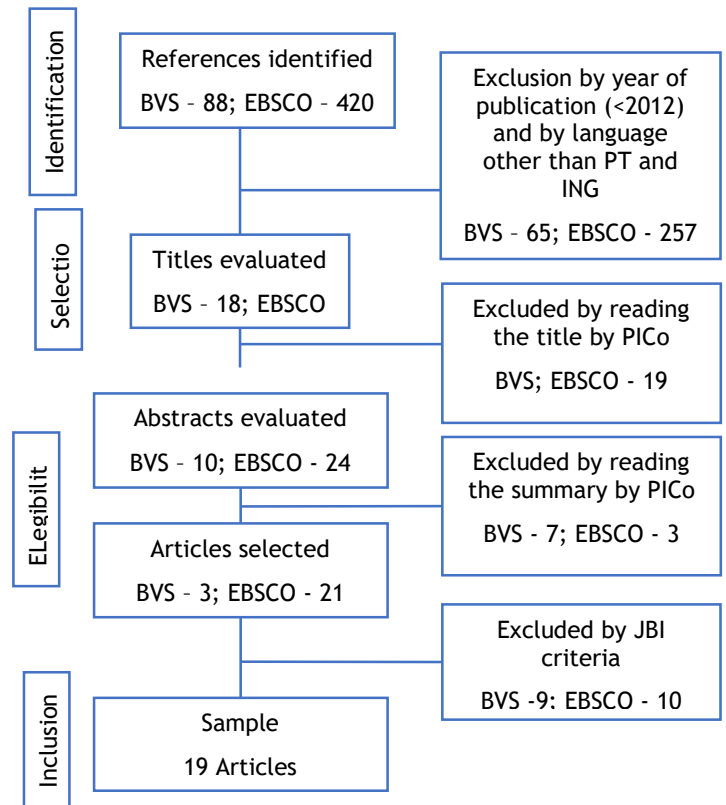
Source: Research data, 2017

Figure 1- *Mapping of identification, analysis and selection of articles*

Since the study aiming is the articles, the principle of respect for the intellectual property of the authors of the articles that make up the sample was considered, through their complete and rigorous citation.

RESULTS

Out of the 19 articles included in this review, 7 were published in 2013[10-16], 4 in 2012[17-20], 3 in 2015[21-23], 2 in 2016[24-25], 2 in 2017[26-27] and the last one in 2014[28].

Regarding the country, 10 origins were found, of which the United States of America with 8 studies, [11-12,14-16, 19,25-26], Singapore[10,22] and Brazil[20,28] with 2 studies each. This is followed by Ireland[21], Belgium[13], Turkey[17], South Korea[18], Sweden[23] and Thailand[27] with 1 article each.

The articles included for data analysis in this SLR are primary studies using quantitative methodology, 8 cohort studies [13,15-17,21,26-28] and 11 descriptive studies [10-12,14,18-20,22 -25].

Samples from selected studies ranged from 14[25] to 16,782[12] stroke survivors.

In this SLR, only one study was carried out in the context of nursing and aimed to identify the nursing diagnosis "Risk of Falling in elderly people with stroke"[20].

We identified 22 risk factors for falls associated with stroke in this review, which were organized according to the NANDA-I categories (Chart 1).

Risk factors	N	NANDA-I
Environmental		
Busy social environment [26]	1	
Environment full of objects [26]	1	√
Physiological		
Walking Difficulties [10,11,14,20,24,25,27]	7	√
Lower end force reduction [10,20,25]	3	√
Reduced mobility [11,16,21,28]	4	√
Population in risk		
Age ≥ 65 years-old [14,20,21,22,24]	5	√
Associated Conditions		
Pharmacological agents (Antihypertensives) [26-27]	2	√
Change in cognitive/sensory function [10,16,20]	3	√
Anemia [12]	1	√
Proprioceptive deficit [20]	1	√
Impaired balance [10-11,16,19-20,22,26-27]	8	√
Use of auxiliary device (e.g. walkingframe, crutches, wheelchair) [13]	1	√
Impaired vision [20]	1	√
Increased tone [27]	1	
Difficulty in transfers [10-11]	2	
Decline in basic activities of daily living [10,15,22,27]	4	
Increased lenght of staying [10-11]	2	
Right hemisphere injury [15,18,28]	3	
Left hemisphere injury [17]	1	
Longer post-stroke time [28]	1	
Psychological		
Fear of falling [16,18]	2	
Depression [26,27]	2	

Source: Research data, 2017

Table 1 – *Comparative summary of risk factors found in the SLR and those classified in the NANDA-I. Lisboa, 2018.*

With regard to the organization of fall risk factors, NANDA-I organizes the indicators into six categories. After researching and analyzing the selected articles, it was possible to add one more category, which was called psychological factors.

In the category of environmental factors, 5 falling risk indicators are presented. The presence of an environment full of objects (n=1) was the only one found. However, in the same article, an additional factor was identified, a calm social environment (n=1) makes the person with stroke feel safer and leaves the house, thus being subject to the environmental hazards that lead to fallings.

The physiological factors category has 10 risk factors in NANDA-I. Of these, the following were found, difficulties in gait (n=7), reduced mobility (n=4) and reduced strength in the lower extremity (n=3).

In the category that encompasses the population at risk, 5 risk factors are presented, with the age greater than or equal to 65 years-old (n=5) having been identified.

In the group of associated conditions, the taxonomy presents 17 risk factors for falls, of which seven were identified: impaired balance (n=8), altered cognitive function (n=3), action of pharmacological agents (anti-hypertensives) (n =2), anemia (n=1), proprioceptive deficit (n=1), impaired vision (n=1) and use of an auxiliary device (n=1). Seven more risk factors for falls not present in the NANDA-I taxonomy were identified: decline in basic activities of daily living (n=4) and damage to the right hemisphere (n=3), difficulty in transfers (n=2), admissions prolonged (n=2), increased tone (n=1), damage to the left hemisphere (n=1) and longer post-stroke time (n=1).

In the category created regarding psychological factors, studies point to fear of falling (n=2) and depression (n=2) as risk factors for falling for the person with stroke.

DISCUSSION

The discussion of the results should focus on the implications of the evidence presented in relation to decisions for clinical practice, thus, seeking to answer the starting question, we found that the risk factors for falls in people with stroke are multiple, with the most identified being: gait difficulties, impaired balance, age ≥ 65 years, decline in basic activities of daily living, reduced mobility, right hemisphere injuries, cognitive alterations and reduced strength in the lower extremities.

Changes in balance resulting from stroke are the greatest risk factor, as the person has difficulty controlling and restoring balance during gait through sudden changes in posture and center of mass [10-11,16,19-20,22,26-27], maintaining balance and postural control are necessary for the proper performance of activities of daily living [20], hence it can be stated that a significant number of falls result from difficulties in correcting postural changes in performing basic activities of daily living.

By analyzing the articles, it was found that changes in gait characteristics such as stride [11], speed [14], variation/stability [24], symmetry [24,27] or even changes in gait in general [10, 20,25] are relevant indicators of the risk of falling in a person with a stroke. Other factors such as increased tone can also affect this function [27].

Although gait difficulties and impaired balance are indicators of risk of falls in people with stroke, it was found that 6 years after the disease, individuals who had few changes in these factors had a greater number of falls than individuals who had greater impairment of gait and balance. This was due to the fact that the group that presented the best gait and

balance assessment was not so awake to the danger of falling, and the group that presented better results developed measures to compensate for the alterations[23]. The findings suggest that monitoring the risk of falling after a stroke is important, even when an initial assessment of gait and balance after a stroke is satisfactory[23]. On the other hand, it states that the longer it has passed since the onset of the disease, the greater is the risk of falling in a person with a stroke[28].

A stroke results in a decrease in the control of the extremities, which limits the person's functional capacity and makes it difficult to carry out activities of daily living, which, associated with other factors, increases the risk of falling[10,20,25].

As for the location of the injury, studies show that injuries to the right hemisphere are more favourable of risk of falling[15,18,28]. This conclusion is associated with the fact that people with stroke in the right hemisphere have more impulsive behaviors and greater visual-spatial deficits that increase the risk of falling[15], they have a spatial hemineglect that translates into a deficit of attention and awareness for the paretic side [18]. These deficits will contribute to gait instability, thus increasing the risk of falling[28]. These people tend to be impulsive, disorganized, overvaluing their abilities and do not learn from mistakes nor instruction, factors that prevent them from becoming independent in their ADLs, given the high risk of falling[17].

Another article found mentions that people with stroke in the left hemisphere fell more (47%) compared to those in the right hemisphere (21%)[17]. In this article, people with damage to the left hemisphere had a four times higher risk of falling over a 6-month period. The authors associate a greater number of falls in people with stroke in the left hemisphere because they present communication problems, but on the other hand, they present visual perception and memory intact. These people learn through demonstration and error, being able to synthesize parts of the tasks, which allow them to become more independent, thus requiring less supervision by professionals. This fact allows explaining the higher incidence of falls in people with stroke in the left hemisphere versus the right hemisphere[17].

Cognitive impairment resulting from stroke is also considered a risk factor for falls. Individuals with cognitive alterations have a reduced perception of their incapacities, leading them to perform tasks beyond their capabilities[10], can cause attention deficits that can lead to accidental falls during ADL[16], compromises gait , balance and postural stability[20]. It was observed that cognitive impairment is a strong indicator of fall risk.

A person with a stroke has difficulty performing activities because they may have spatial disorientation, with their capacity for protective response compromised, which associated with a change in gait, balance and postural stability leads to the occurrence of falls.

The analysis of the articles indicates a high sensitivity for assessment instruments, allowing the identification of risk factors for falls, such as BBS (Berg Balance Scale)[10,22], TUG (Timed Up & Go Test)[16,28] and FIM (Functional Independence Measure)[10,15,22,27]. The TUG assessment instrument assesses a person's static and dynamic balance capacity, involving functional maneuvers such as standing, walking, turning and sitting. The Berg scale is an instrument to assess static and dynamic balance. The results found reveal that poor performance in these tests is reflected in a risk of falling, as poor balance is associated with falls[22]. Regarding the FIM, in this review, it was found that low global score values[22,27] are indicators of risk of falling. Within the different categories that make up the assessment instrument, it appears that there is a greater risk of falling for people with low scores in terms of bladder and bowel control, transfers, mobility, hygiene and clothing[10], as well as the use of the toilet , transfers to bed, bath/shower and use of stairs[15]. Thus, it is possible to affirm that these assessment instruments are relevant to determine the risk of falling in the study population.

In terms of the physical environment, it was found that fallings occur more frequently at home. Based on the analysis of the articles, the most common places where falls occur are in the bathroom[10,16,18] and in the bedroom[11], which reinforces the aforementioned, that low FIM values in the use of toilets and transfers for bed, bath/shower[15], are indicators of risk of falling. Although these studies point to these divisions as places of frequent falls in people with stroke, they do not indicate whether they are due to the lack of non-slip material, lack of toilet support bars or bathtubs/showers, presence of carpets, rooms with a lot of furniture that make it difficult circulation by division. These data would be essential for the SLR, since an assessment of the home by professionals is important, education about safety, as well as modification of the home environment during discharge planning, contributing to avoid falls at home[10]. It was also found that in places with less safe social environments there is a lower number of falls, this is due to the fact that the person with stroke does not feel so safe going out into the street, thus not running the risk of falling while walking on the street [26].

Disabilities, at the motor, sensory and visual level, characteristics of stroke, lead the person to be more vulnerable and to have episodes of falls, which can result in hospitalization, delay in the rehabilitation process, decrease in social participation or death.

In the SLR found on this theme[30], the authors found several risk factors for falls in people with stroke. Balance and greater dependence on activities of daily living are presented as the most frequent, a result that reinforces the findings obtained in our study. This SLR points out other risk factors found in our research, namely, difficulty in walking, reduced mobility, decreased strength in the extremities, cognitive and sensory alterations, fear of falling, depression and hemineglect as a risk factor, which in the present research was associated with lesions of the right

hemisphere and cognitive alterations. Unlike the present research, the study states that there is no association between the location of the stroke injury and age as a risk of falling.

Thus, given the literature found, considered to be of quality and current, it was possible to identify some similarities that reinforce the findings and solidify the results obtained.

It appears that there are risk factors that are not classified in NANDA-I, such as physical/social environmental factors[26], injuries to the right hemisphere[15,18,28], decline in basic activities of daily living[10, 15,22,27], prolonged hospitalization[10,11], difficulty in transfers[10,11], fear of falling[16,18], depression[26,27], increased tone[27], hemispheric stroke left[17] and longer post-stroke[28].

Based on the results of the SLR and the NANDA-I proposal on the risk factors for falls in people with stroke, the multifactorial existence of risk factors is confirmed, which requires comprehensive interventions.

Thus, the results contribute to the nurses' knowledge, as the findings can be applied in clinical practice, thus allowing an evidence-based practice.

The Specialist Nurse in Rehabilitation Nursing has assigned specific skills, as "rehabilitation nursing care is an area of specialized intervention that stems from a body of specific knowledge and procedures. Its focus of attention is the maintenance and promotion of well-being and quality of life, the recovery of functionality, as much as possible through the promotion of self-care, the prevention of complications and the maximization of capabilities." [31]. Therefore, this professional must know the risk factors for falls in stroke identified in this study and carry out preventive measures towards them, but not limit the thought, assessment and action based on them. This specialized intervention allows improving the functionality of the person with stroke through specific actions of the specialist rehabilitation nurse, maximizing the person's functionality and minimizing risk factors.

The environmental risk factor can be minimized by the RN, if it assumes its role of promoting a safe environment, through home visits and health education strategies. Most of the time, the person with a stroke does not fall for performing dangerous activities, but for performing basic activities of daily living. Identifying the environmental risk factors as well as enabling the person to carry out activities safely through safe techniques, allows this expert to intervene in order to eliminate some of these factors and thus prevent fall events.

The use of appropriate assessment tools by the RN, in turn, facilitates the assessment of the functionality of the person with stroke, also allowing for the identification of the existence of a risk of falling.

CONCLUSION

The SLR contributed to the systematization of knowledge and comparison of various studies, thus allowing the organization of the state of the art in a given issue.

The articles analyzed are studies carried out with instruments in different contexts, with data collected in different countries around the world, thus allowing a vast knowledge of the problem, which is the reason found for the existence of a large number of factors.

Numerous studies were found about risk factors for falls in people with stroke. The fact that most of the articles found are not in the field of Nursing constitutes a limitation to the study.

Based on the results of the SLR and answering the research question, the following risk factors for falls in people with stroke were identified: walking difficulties, impaired balance, age over 65 years-old, reduced mobility, decline in basic life activities daily, reduced strength in the lower extremity, lesions in the right hemisphere and cognitive alterations. This confirms the multifactorial nature of risk factors, which requires comprehensive and multidisciplinary interventions. Thus, in a person with a stroke, a multidisciplinary approach and an assessment of their general state, knowledge, abilities and deficits is necessary.

During the research period, only one article was found in the scope of nursing. Therefore, given the number of risk factors found, it is suggested that further studies be carried out in this area.

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