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REFLECTIVE ANALYSIS OF FALLS IN THE SAFETY OF PATIENTS ON DIALYSIS

Onislene Alves Evangelista de Almeida[1], Maria Cristina Soares Rodrigues[2], Walterlânia Silva Santos[3]

ABSTRACT: The purpose of this study was to present a reflective analysis of falls and its singularities in chronic kidney disease and dialysis treatment on the basis of publications on the topic. It was observed that chronic kidney disease and dialysis add some particularities to the prediction of the risk of falls. Qualified interventions in the identification of risk and prevention of complications associated with this event are crucial. Studies that explain the mechanisms of interaction between falls and dialysis treatment are scarce, therefore new studies are necessary to develop an instrument that is effective for the stratification of the risk of falls.
DESCRIPTORS: Renal Insufficiency, Chronic; Renal Dialysis; Accidental Falls; Risk Factors; Patient Safety.

ANÁLISE-REFLEXIVA SOBRE O EVENTO QUEDA NA SEGURANÇA DO PACIENTE EM HEMODIÁLISE

RESUMO: O objetivo deste texto foi apresentar uma análise-reflexiva sobre o evento adverso queda e suas peculiaridades na doença renal crônica e tratamento hemodialítico a partir de publicações acerca do assunto. Verifica-se que a doença renal crônica e a hemodiálise adicionam particularidades na predição do risco de queda. Intervenções qualificadas na identificação do risco e prevenção de complicações associadas a esse evento são imprescindíveis. Estudos que explicam os mecanismos da interação entre quedas e tratamento dialítico são escassos, portanto, novas pesquisas são necessárias para a construção de um instrumento eficaz na estratificação do risco de queda.
DESCRITORES: Insuficiência renal crônica; Diálise renal; Acidentes por quedas; Fatores de risco; Segurança do paciente.

ANÁLISIS-REFLEXIVO SOBRE EL EVENTO CAÍDA EN LA SEGURIDAD DEL PACIENTE EN HEMODIÁLISIS

RESUMEN: El objetivo de este texto fue presentar un análisis-reflexivo sobre el evento adverso caída y sus peculiaridades en la enfermedad renal crónica y tratamiento hemodialítico a partir de publicaciones acerca del asunto. Se verifica que la enfermedad renal crónica y la hemodiálisis agregan particularidades en la predicción del riesgo de caída. Intervenciones calificadas en la identificación del riesgo y prevención de complicaciones de la interacción entre caídas y tratamiento dialítico son escasas, por tanto, nuevos estudios son necesarios para la construcción de un instrumento eficaz en la estratificación del riesgo de caída.
DESCRIPTORES: Insuficiencia renal crónica; Diálisis renal; Accidentes por caídas; Factores de riesgo; Seguridad del paciente.

[1]Nurse. Master's Student in Nursing. University of Brasilia. Brasilia, DF, Brazil.
[2]Nurse. Post-doctoral degree in Life Sciences. Professor of the University of Brasilia. Brasilia, DF, Brazil.
[3]Nurse. PhD in Life Sciences. Professor in the Ceilandia Faculty of the University of Brasilia. Brasilia, DF, Brazil.

Corresponding author:
Onislene Alves Evangelista de Almeida
Universidade de Brasília
Campus Universitário Darcy Ribeiro - 70.910-900 – Brasília, DF, Brasil
E-mail: onislene@gmail.com

● INTRODUCTION

Patient safety strategies include countless interventions at key points of health care which may result in harm to patients and increased costs. Among these strategies, the prevention of falls is essential for the promotion of safety, and it stands out as one of the international goals of the WHO's World Alliance for Patient Safety, especially for individuals who suffer from chronic kidney disease (CKD) and who are on dialysis.

Some studies point out the need to acknowledge factors intrinsic to CKD and dialysis that increase the probability of falls, thus making it necessary to identify elements related to a higher predisposition to this event, which in turn is associated with high rates of fractures and mortality, especially when they are related to factors of senility itself[1-2].

In this study, we highlighted the event of falls that cause harm. To this end, understanding the relationship among CKD, dialysis and predisposition to falls will contribute to the identification of high-risk patients, in addition to the implementation of more effective preventive measures. It will also allow developing tools for the identification of risks that are sensitive to elements intrinsic to CKD and dialysis.

To outline this reflection, the databases Cumulative Index to Nursing and Allied Health Literature (CINAHL) and National Library of Medicine (PubMed) were consulted in October 2015, using the descriptors "Chronic Renal Insufficiency" and "Accidental Falls". After this search, the articles selected were read so that we could write a paper with the purpose of presenting a reflective analysis of falls and its singularities in chronic kidney disease and dialysis.

● FALLS AND IMPLICATIONS FOR SAFE CARE

Falls among elderly patients with CKD undergoing dialysis have a high prevalence and are associated with risks of high morbimortality. In spite of that, little emphasis is put on the identification, prevention and adequate management of these patients in terms of risk of falls[1-2].

A systematic review of falls of patients with altered renal function found 14 studies published between 2003 and 2014, and showed an incidence of falls among patients with CKD ranging from 1.18 to 1.60 falls/patient per year, this event being recurring within the same group of patients, especially elderly and fragile patients. Although the selected studies reported an average age ranging between 44 and 78 years, most falls were associated with elderly patients[2].

An observational study highlighted that among complications resulting from falls of patients on dialysis, fractures occur in 11.2% of cases. The most affected sites were the lower limbs, followed by two hip fractures and one injury on the forehead; in addition, it was found that 71% of patients were hospitalized[3].

Another study assessed the event of 20 fatal cases, 14 admissions in care units and 219 hospitalizations in two years related to falls of patients undergoing chronic dialysis(4). Other studies also highlighted that the incidence of falls in individuals on dialysis result in severe consequences, such as fractures and death[3,5-6].

● FACTORS RELATED TO FALL IN CHRONIC KIDNEY DISEASE AND DIALYSIS

There is a lack of studies on the risk of falls, especially regarding CKD and dialysis. Few studies assessed the dialysis process itself as a risk of fall[1,4-5,7].

Although falls are the result of a complex interaction between several individual and environmental risk factors, the coexistence of factors such as polypharmacy, comorbidities and changes in volume and degree of CKD suggest a higher propensity to fall among these individuals than the general population[8].

Diabetes mellitus, the main cause of CKD in the world, is associated with micro and macrovascular complications, increasing susceptibility to falls. Peripheral vascular disease, cardiovascular problems and high blood pressure with events of low blood pressure related to multidrug use can also contribute to a high incidence of falls among this population. Vitamin D deficiency, commonly found in patients with

compromised renal function, can contribute to the increase of falls[9].

Myopathy related to muscle weakness often occurs in uremic patients and maximizes the risk of falls in patients with CKD(9-10). The evident decrease in exercise tolerance, observed in patients on dialysis, is accorded to different central and peripheral factors and results in myopathy and uremic neuropathy[9].

There are other risk factors related to complications or adverse effects of dialysis itself, such as intradialytic hypotension, or hypotension right after treatment in 15 to 30% of elderly patients. The treatment affects strength and mobility; after comparing patients before and after dialysis, weakness and slower mobility were observed, suggesting that post-dialysis fatigue affects the occurrence of falls among this population[9].

A survey has shown the relationship between falls and malnutrition in CKD patients[3]; such condition is related to sarcopenia, which in turn is correlated to fragility and vitamin D deficiency, antioxidants and trace elements. Proteins are associated with osteoporosis, disability and sarcopenia[8].

A study on the event of falls, before and after dialysis, showed an incidence of 27% before dialysis and 73% after dialysis, indicating a possible direct relationship between treatment and the occurrence of falls, which requires further clarifications as to its mechanisms of association[7].

Chart 1 presents the risk factors for falls of patients on dialysis, according to scholars[9].

Chart 1 - Common risk factors for falls of elderly patients on dialysis. Brasilia, Federal District, Brazil, 2015

Age-related	Comorbidities related to CKD	Stage 5 CKD / Dialysis
Gait disturbance Reduction in mobility Cognitive impairment Postural hypotension Multiple medication Hearing impairment Visual impairment Cardiovascular disease Neurological disease Impaired postural control Impaired strength and muscle tone Balance impairment Arthritis Depression Daily activities hampered	Diabetes mellitus, with micro and macrovascular sequels Peripheral vascular disease, cardiovascular problems Events of high and low blood pressure	Hypotension related to dialysis Mineral and bone disorder Myopathy Anemia Metabolic acidosis Dialysis disequilibrium syndrome Dialysis encephalopathy Catheter-related infection/sepsis Arrhythmia related to dialysis Postdialysis fatigue

● **RISK ASSESSMENT AND PREVENTION OF FALLS IN DIALYSIS SERVICES**

The understanding of specific risk factors in this population is essential in order to acknowledge and identify high-risk patients and develop specific intervention programs[5,8].

In the present literature search, only one instrument of identification of patients on dialysis with a high risk of falls was found, in which a score was given after the assessment of risk factors that are specific to dialysis (Chart 2)[1].

Chart 2 - Risk assessment of falls of elderly patients on dialysis. Brasilia, Federal District, Brazil, 2015 (continues)

Risk Factors	Score
History of falls in the last three months	2
Aged over 75	2

Confusion, changes in the mental state, reasoning difficulties or recent stroke	3
Gait disturbance	1
Requires the use of accessories (walker, stick)	2
Requires the use of a wheelchair	1
Dizziness, vertigo	1
Anticoagulant therapy	2
Standardized International Index >2	2
Postural hypotension	1
Takes drugs related to the risk of falls (such as sedatives and narcotics)	2
TOTAL	
Score: 0-2 points considered normal or low risk; 3+ points considered high risk of falls and complications	

Another script is a questionnaire that helps identify areas in which preventive measures can be implemented before the event of falls, in addition to raising awareness within the healthcare staff as to matters related to falls[11].

The Fried frailty index or the indicators selected in this index can be used to screen patients who are under an increased risk of falls. A study showed that the indicators of mobility, nutrition, physical exercise and resistance, in combination with cognition, maximize the estimated disability of older adults, in addition to age, gender and comorbidities[3].

The frailty reflected by non-intentional weight loss, weakness, tiredness, low activity and low walking speed was identified as a new risk factor for falls in adults of all ages and who were on dialysis. Furthermore, it is suggested that, among elderly and young patients on dialysis, frailty increases the risk of falling in the short term[8].

A Brazilian study reported the use of the Falls Efficacy Scale-International (FES-I) as an instrument that detects such event and it has proved to be successful in the distinction between falling and non-falling individuals. It can be used in the assessment of the possibility of falling in this population, and in the monitoring of these patients when they have been submitted to exercise programs with the purpose of minimizing the impact of falls[12].

Other interventions, such as vitamin D supplementation and exercises, successfully reduced the number of falls. Health education and behavioral counseling on the prevention of falls among the high-risk geriatric population is an important aspect that is normally undertaken[9].

It is imperative that patients arriving at dialysis centers be examined as to the risk of falls, for instance, in the initial evaluation conducted by the nursing team[1]. Further studies are necessary, in other contexts, to determine whether tracking and prevention programs can effectively reduce falls among the population on dialysis[2].

● **CONCLUSIONS**

In view of the evidence of the high risk of falls among individuals who are on dialysis, the implementation of an instrument of stratification of risks for patients in this condition is extremely important and appears as an opportunity and a strategy for further research and studies.

The nursing team has a prominent place in a safe environment in a dialysis center, since it can provide early detection of elements associated with the high risk of falls, thus contributing to the understanding of existing relationships, strengthening risk assessment as a practice to be included in the detection of patients with greater disposition in the context of CKD and dialysis. In that sense, reducing the event of falls in this population must be a priority and an indicator of care quality.

Therefore, the reflections brought to light in this article contribute to the progress of nursing care in its physical dimension, with psychosocial effects on individuals on dialysis, on the basis of interventions and the

use of tools that promote safe care.

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