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PREVENTING FALLS IN THE HOSPITAL CONTEXT: PERSPECTIVE OF NURSING RESIDENTS IN LIGHT OF ENVIRONMENTAL THEORY

Prevenção de quedas no contexto hospitalar: Perspectiva dos residentes de enfermagem à luz da teoria ambientalista

Prevención de caídas en el contexto hospitalario: perspectiva de los residentes de enfermería a la luz de la teoría ambiental

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ABSTRACT

Objective: to identify the perspective of nursing residents in the hospital environment on environmental factors in preventing falls; Analyze environmental factors and correlate them with Florence Nigthingale's environmental theory. **Methods:** the present study is descriptive-exploratory in nature, with a qualitative data approach. This work comes from the dissertation entitled: Educational measures implemented by resident nurses for patients vulnerable to falls in the hospital context. **Results:** participants understand that the hospital environment can influence the risk of falls. Among the most cited environmental factors are non-elevated railings; Distance of beds from the nursing station; unsanitary bathrooms. **Conclusion:** residents demonstrated an understanding of the environmental factors that impact falls and what pre-established actions are taken to prevent falls from occurring. However, a larger sample, with a quantitative method, could be beneficial in future studies.

DESCRIPTORS: Acidentes por quedas; Enfermagem; Assistência hospitalar; Educação;

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RESUMO

Objetivo: identificar e analisar a perspectiva dos residentes de enfermagem sobre prevenção de quedas no ambiente hospitalar à luz da teoria ambientalista de Florence Nightingale. **Métodos:** estudo descritivo-exploratório, com abordagem qualitativa. Esse trabalho é oriundo da dissertação intitulada: Medidas educativas implementadas por enfermeiros residentes aos pacientes vulneráveis a quedas no contexto hospitalar. **Resultados:** os participantes entendem que o ambiente hospitalar pode influenciar o risco de quedas. Entre os fatores ambientais mais citados são grades não elevados; Distância dos leitos do posto de enfermagem; banheiros insalubres. **Conclusão:** os residentes demonstraram compreender quais são os fatores ambientais que impactam na queda e quais as ações pré estabelecidas para prevenir a ocorrências de quedas. No entanto uma amostra maior, com método quantitativo, pode ser benéfico em estudos futuros.

DESCRITORES: Acidentes por quedas; Enfermagem; Assistência hospitalar; Educação;

RESUMEN

Objetivos: identificar la perspectiva de los residentes de enfermería en el ambiente hospitalario sobre los factores ambientales en la prevención de caídas; Analizar los factores ambientales y correlacionarlos con la teoría ambiental de Florence Nightingale. **Métodos:** el presente estudio es de carácter descriptivo-exploratorio, con un enfoque de datos cualitativos. Este trabajo surge de la disertación titulada: Medidas educativas implementadas por enfermeros residentes para pacientes vulnerables a caídas en el contexto hospitalario. **Resultados:** los participantes entienden que el ambiente hospitalario puede influir en el riesgo de caídas. Entre los factores ambientales más citados se encuentran las barandillas no elevadas; Distancia de las camas desde el puesto de enfermería; baños insalubres. **Conclusión:** los residentes demostraron comprensión de los factores ambientales que impactan las caídas y qué acciones preestablecidas se toman para evitar que ocurran caídas. Sin embargo, una muestra más grande, con un método cuantitativo, podría resultar beneficiosa en futuros estudios.

DESCRIPTORES: Accidentes por caídas; Enfermería; Hospital care; Educación.

INTRODUCTION

Falls in hospital settings are stressful events that cause great harm to those involved, such as patients and their families, healthcare professionals and the hospital's administrative and financial staff.¹⁻²

Its etiology is multifactorial, with clinical and environmental factors influencing its occurrence. The clinical factors are advanced age, cognitive impairment, sensory and motor impairment, the use of certain types of medication, severe obesity and a history of falls. The most commonly cited environmental factors are slippery surfaces, loose carpets, insufficient lighting and unsuitable footwear.³⁻⁴ In addition to the physical structure, other factors in the hospital environment can have an impact on the quality of care, such as the lack of professionals and organization of the environment, overloading the nursing teams.⁵

In addition to the factors already mentioned, there are also social, cultural and behavioral conditions that can influence the occurrence of falls. This poses major challenges for the implementation of fall prevention actions, as many of these factors are immutable and/or difficult to control.⁴ It is worth emphasizing that a safe environment is the most efficient action, as it is a changeable condition that can positively influence fall prevention.

Concern about falls, which is considered an adverse event, gained more prominence in 2010 when the World Health Organization (WHO) implemented the global alliance to improve the quality of services and patient safety, establishing six international health goals, the sixth of which is fall prevention.^{3,6-7}

The establishment of goals and objectives to improve the quality of services provided to patients is a current concept, but it is not new. In 1854, Florence Nightingale developed the environmental theory, stating that the environment is an external factor that can have an impact on an individual's life and health.⁸

This theory has four basic concepts: human, environment, health and nursing. The human concept is the individual interfering in their health-disease process; the environment is the external conditions interfering in health care, such as aeration, luminosity, noise and others; health is the pathophysiological process of the disease; nursing is the care provided by the team.⁹⁻¹⁰

The use of these concepts has provided a solid basis for authors in the area of health surveillance within the hospital context for a long time.⁸ However, the environment is not just about cleanliness, but also about adequate structure and suitable working conditions.

Although Florence did not work directly with fall prevention, his theory was that controlling the environment could prevent situations that could harm patients' health.⁹

Thus, the hospital environment can be inhospitable and have various factors that can cause harm to patients, such as venous therapies that can limit mobilization, medications that can lower the level of consciousness, risk of infection from invasive devices, among others.⁷ It is up to nursing to minimize these risks in order to provide the best care.

Nursing assistants are often overloaded with the various demands of the sector and can minimize some basic care¹. This calls for continuous action, the establishment of institu-

tional falls protocols and the search for new methodologies for improvement.

It is worth pointing out that a major difficulty in implementing these proposals is the resistance of the nursing team and the multidisciplinary team to change⁸. It is therefore important that these professionals are sensitized at the start of their academic careers, as is the case with nursing residency.

There is great potential for studies with residents, as they are directly involved in teaching, research and extension activities. Studies on the perception of nursing residents are scarce, especially in relation to patient safety, which makes research on this subject necessary. Based on this assumption, this study aims to: Identify and analyze the perspective of nursing residents on fall prevention in the hospital environment in the light of Florence Nightingale's environmental theory.

This study is justified due to its proposal to discuss important issues that have not yet been debated; to expand knowledge about Florence Nightingale's environmental theory; to subsidize productions on the themes of fall prevention and patient safety; nursing residents.

METHOD

This is a descriptive-exploratory study with a qualitative approach to data.¹¹ This work comes from the dissertation entitled: Educational measures implemented by resident nurses for patients vulnerable to falls in a hospital setting.

The study participants are resident nurses who work in hospital settings. The proposal was designed so that the first participants would be from different areas of specialty, as well as from different health institutions.

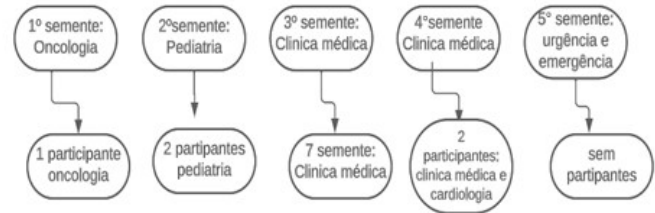
The selection criteria for the participants were: to be nursing residents with more than 6 months of residency experience. This group was chosen to avoid conflicts of interest between institutions and to broaden the sample to include different professional practices

Participants who agreed to take part in the study signed an informed consent form (ICF), one copy of which remains with the researcher and the participant can request a copy via the questionnaire link. The ICF included the objectives of the research, the risks and benefits, the signature and telephone number of the researcher and the research supervisor. It was made clear that if, for any reason, the interviewee wished to withdraw, they would be free to do so and that confidentiality would be guaranteed to ensure privacy.

The sample was selected by network sampling or snowball sampling. In this approach, the initial informants (seeds) indicate who the next participants in the study will be.¹¹ The first participants (seeds) were selected through the researchers' personal network, and contact was made via WhatsApp to invite them, through an invitation letter that included a link to the google® forms and a Free and Informed Consent form with information about the research, to be answered

once they had agreed to take part in the study. In the text, it was defined that Enf plus the numbering would define the participant (Example: ENF1, ENF 2, ...), Consequently, open and closed questions were asked on the subject in question. Below is the flow of seed selection and the final sample.

Figure 1 - Seed selection and flow.



Source: prepared by the authors.

The final sample consisted of 17 participants. The data was analyzed using content analysis, which is divided into 3 stages: Pre-analysis, Analysis of the material, Treatment of the results obtained and interpretation.¹² IRAMUTEQ® software was used to help analyze the data.

Using the data obtained from the software, it was possible to decode the participants' speeches and process the results and summarize the data.

This study complied with the ethical prerogatives of Resolution No. 466 of December 12, 2012, which sets out the guidelines and regulatory standards for research involving human beings.¹³ This study was submitted to the UNIRIO Research Ethics Committee and approved under CAAE: 68612123.8.0000.5285. Data collection began after approval by the UNIRIO Ethics Committee and took place between August and October 2023.

RESULTS

The participants who answered the questionnaire. The average age was 25.9 years, with the majority of the sample being nurses with less than 2 years of training (n=12/80%), with a balance between public universities (n=8/53.3%) and private universities (n=6, 46.7%).

The year of residency tended to be the second year (n=9/60%) of residency. The majority of residencies are linked to federal training units, with two participants from municipal training units, demonstrating diversity in residency experiences. Below is a table describing the participants.

The profile of the residents was very diverse, with two representatives from oncology, three from pediatrics and ten from medical-surgical clinic, as well as one from cardiology and one from emergency and urgent care.

The participants understand that the hospital environment can influence the risk of falls. As can be seen in the table below.

Table 1 - Profile of the participants.

Data	Number of participants	Average/percentage
Age	23 (n=1); 24 (n=1); 25 (n=5); 26 (n=2) 27 (n=2); 30 (n=2); 31 (n=2); 41 (n=1)	M= 25,9 25 = 29,4% 26, 27, 30, 31 =11,8% 23, 24 e 41= 5,9%
Training time	Menos de 1 ano (n=6); 1-2 anos (n=6); 3-5 anos (n=2); Mais de 5 anos (n=1)	Menos de 1 ano = 40,% 1-2 anos = 40 % 3-5 anos = 13,3 % Mais de 5 anos (n=1)
Postgraduate studies	Residência (n=12) Especialização (n=5)	Residência = 70,5 % Especialização = 29,5%
Institute of higher education	Públicas (n=8); Particular (n=6)	Públicas= 53, 3% Particular= 46,7 %
Length of residence	Primeiro ano R1 (n=6) Segundo ano R2 (n=9)	R1= 40 % R2= 60 %
Training unit	Instituto Federal (N=13) Instituto Municipal (N=2) Instituto privado (N=0)	Hospital ou Instituto Federal = 86,6% Hospital Municipal= 13,3%
Sector	Clínica médica (n=10); Pediatria (n=3); Oncologia (n=2); Urgência e Emergência (n=1) Cardiologia (n=1)	Clínica médica = 58,8% Pediatria = 17,6% Oncologia = 11,7% Urgência e Emergência = 5,8% Cardiologia =5,8%

Source: prepared by the researchers.

Chart 2 - The environment as a predictor of falls.

Do you believe that the environment influences the occurrence of falls?

Yes (N=17/100%)

No (N=0/0%)

Source: research prepared by the authors.

Among the most frequently cited environmental factors are railings that are not high; distance of beds from the nursing station; unhealthy bathrooms, which can refer to their structure, excessive humidity and the frequency with which they are cleaned. It should be noted that there could be more than one answer to this question. As can be seen in the images below.

Chart 3 - Environmental factors influencing falls.

Environmental factors that influence falls	
Wet floor	(N=10/58,8%)
Grids not raised	(N=13/76,5%)
Unhealthy toilets	(N=12/70,6%)
Unhealthy toilets	(N=9/52,9%)
Bed size	(N=8/47,1%)
Distance from nursing stations	(N=8/47,1%)

Source: research carried out by the authors.

Fall prevention actions were reported in the environment, mainly in relation to bed rails and appropriate footwear, as can be seen in the following statements.

Raised bed rails, locked bed, appropriate footwear, removal of objects that hinder mobility, installation of supports in the bathroom and wherever possible. (ENF 3).

Guidance Raised railings, appropriate footwear when used, non-slip, dry floors, handrails, organization of the bed (Enf 10).

Residents were also concerned about educational reinforcement of the importance of following the guidelines on the hospital environment for nurses and especially for patients.

Periodic training in preventing the risk of falls through realistic simulations, a hospital overview of the risks of falls, vigilance by the patient safety center in identifying those who fall on the wards (ENF1).

More fun and practical training, importance of the nurse encouraging patient safety. Staff willing and committed to continuing education (ENF5).

What is already done, reinforcing safety measures, such as keeping crib rails up and instructing the companion not to leave the child alone without supervision (ENF11).

Guiding patients on how to care for crib rails, given that the setting I work in is pediatric... (ENF13).

It was also possible to see in the participants' speeches some situations that can hinder the implementation of

these practices, such as high daily demand, staff adherence and lack of professionals.

There are limitations due to the high turnover of services, the high demand from professionals who may not be well focused on education information (ENF5).

Team adherence (ENF7).

DISCUSSION

All the participants believed that the environment influences falls. From their perspective, the greatest environmental risks are unsecured railings, unhealthy toilets and the distance between workstations.

Barbosa¹⁴ described the causes of falls in hospitalized patients and out of 1112 reports of falls in 3 years, 1096 were related to the environment, with equipment failure, wet floors, lack of railings and poor lighting being the most cited. Other studies corroborate this data, with the lack of non-slip flooring and poor lighting¹⁵⁻¹⁶ being the most cited. This perspective differs somewhat from what the participants said. It's worth noting that the residency's workload is during the day, and lighting isn't a problem during this shift, which is perhaps why it wasn't mentioned by the residents.

The aforementioned factors are the responsibility of the hospital and the care team, as the use of medical devices and the clinical condition are predisposing conditions for falls. As such, the hospital environment needs to have inclusive architecture and accessibility, in line with current standards and legislation.¹⁷

The dimensions need to be safe and follow an acceptable standard, requiring a bathroom for each room with doors that open outwards, or allow them to be removed from the outside so that they can be opened without the need to push the patient who may have fallen behind the door, and vigil lighting on the walls.¹⁷ The hospital environment is structurally designed to minimize these events.

With regard to the participants' concerns about controlling the environment to prevent falls, the most frequently cited interventions were raised railings and the use of non-slip footwear. When it comes to environmental interventions that can help prevent falls, the same ones cited by the participants are also seen in other studies, and the participants' views are in line with current scientific production.^{14,18}

Participants cited raising railings, locking beds and wearing non-slip shoes as the main preventive actions. These precautions corroborate those recommended by the falls and patient safety protocols implemented by the Ministry of Health.^{3,6} These protocols come from the WHO Global Report on the Prevention of Falls in Old Age.¹⁹

According to the WHO, the identification, assessment and correction of environmental factors are considered effective interventions. However, the impact of environmental changes on the incidence of falls and the number of injuries caused by

them is still insufficient for a definitive conclusion, and further research is needed on this subject.¹⁹

Fall prevention is initiated through risk assessment and multifactorial evaluation, with educational interventions that reduce the environmental risk, as well as associating it with the clinical characteristics of the patients involved.¹⁹ Considering the scenario of fall prevention, the environment is always a changeable factor that can be adapted to the patient's needs, and is the main focus of predictive and educational activities. Thus, a large part of the literature on preventive actions related to falls focuses on improving dexterity and balance with physical exercises; the use of walking aids such as walkers, whenever necessary; and good lighting, especially at night.²¹

In 1898, Florence Nightingale⁸ in her book *Notes on Nursing* stated that unhealthy sanitary, architectural and administrative facilities make safe care impossible, but that nursing should include arrangements that make work possible.

One of the nurse's activities is certainly prevention, and an unsafe environment can negatively influence the health process.^{7,8} One of the foundations of environmental theory is prevention. The theory is based on five points, which she believed to be essential for achieving a healthy environment: pure water and air, basic sanitation, cleanliness and brightness, as she believed that a healthy environment was fundamental for healing.²² Although it is generally applied to health nursing, its applicability also affects other patient safety topics, such as fall prevention.

Florence promotes in her theory that the environment can influence the patient's recovery, and if we understand this, aligned with the factor that a safe environment is one of the main precautions in preventing falls, we can correlate these two themes.^{7,21}

Concern for patient safety and the prevention of adverse events is a relatively new concept, and modern nursing has preserved many of the principles of environmental theory.²²

Florence Nightingale in her book discusses prevention as a focus based on the environment, although her perceptions are limited to pre-existing concepts at the time, she is considered one of the forerunners of patient safety.^{6,8} Although Florence does not directly mention fall prevention, her concept of minimizing problems related to the environment certainly has an impact on fall prevention.

The high demand for care and the disorganization of the environment can have an impact on the nursing care provided.⁵ These environmental factors are also mentioned in some statements, but they are not directly correlated with falls, even though they are mentioned as difficulties. In order to minimize these factors, the education of professionals and patients has emerged as a possibility for preventing falls, and its effectiveness has been seen in some previous studies.^{23, 24}

In addition to the use of training programs, open communication in the workplace, the reporting of adverse events and a non-punitive response to errors are strategies that can promote improvements in patient safety.²⁵

The use of technological means can also help in the education process, such as written materials (e.g. folders), audiovisuals (e.g. videos) and educational games, especially when talking to patients and caregivers.²⁶

CONCLUSION

This study was able to demonstrate residents' perception of environmental risks in relation to falls within the hospital context. The importance of a safe environment in nursing care is of paramount importance for quality care.

Residents demonstrated an understanding of the environmental factors that have an impact on falls and the pre-established actions to prevent falls.

There is a need for studies on residents' perceptions of other topics, especially with a quantitative approach, as this is a target population with a lot of potential for new research. More studies are also needed on the impact of the environment on falls and what actions are most effective in preventing them.

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