ORIGINALES

Impact of educational intervention in hospitalized patients' fall risk perception and associated factors

Impacto de intervenção educativa na percepção de pacientes hospitalizados sobre risco de quedas e fatores associados

Impacto de la intervención educativa en la percepción de pacientes hospitalizados con riesgo de caídas y factores asociados

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ABSTRACT:
Objective: To analyze the impact of educational intervention on hospitalized patients' perception about fall risk and their associated factors.
Methods: This is quasi-experimental research with 157 patients hospitalized in a tertiary-level public institution in northern Ceará, Brazil. Data were collected before and after educational intervention mediated by a booklet on fall prevention. "Risk for falls" Nursing Diagnosis was identified, and the Falls Risk Awareness Questionnaire (FRAQ-Brazil) scale was applied. Data analysis occurred from McNemar's and Wilcoxon tests.
Results: In pre-test, the groups were different regarding fall risk perception (p<0.000), in which the group with the least risk had a median of correct answers of 12 (interquartile range=9), while the group higher risk for falls had a median equal to 14 (interquartile range=8). However, in post-test, the groups become homogeneous regarding fall risk perception (p=0.676) with an increase in the median number of correct answers in both.
Conclusion: The results found in this study indicate that the educational intervention performance mediated by the booklet is effective to promote improvement in hospitalized patients' fall risk perception.

Keywords: Accidental Falls; Risk Factors; Health Education; Educational Technology; Nursing.

RESUMO:

Objetivo: Analisar o impacto de intervenção educativa na percepção de pacientes hospitalizados sobre risco de quedas e seus fatores associados.

Métodos: Trata-se de pesquisa quase-experimental com 157 pacientes hospitalizados em instituição pública de nível terciário na região Norte do Estado do Ceará-Brasil. Os dados foram coletados antes e após intervenção educativa mediada por cartilha sobre prevenção de quedas. Foi identificado o diagnóstico de enfermagem Risco de queda e aplicado escala Falls Risk Awareness Questionnaire (FRAQ-Brasil). A análise dos dados ocorreu a partir do teste de McNemar e Wilcoxon.

Resultados: No pré-teste, os grupos eram diferentes quanto à percepção do risco de quedas (p<0,000) em que o grupo com menos risco apresentou mediana de acertos de 12 (Intervalo interquartílico=9) enquanto o grupo maior risco para quedas apresentou mediana igual a 14 (Intervalo interquartílico=8). Porém, no pós-teste, os grupos tornam-se homogêneos quanto à percepção dos fatores de risco para quedas (p=0,676) com aumento da mediana de acertos em ambos.

Conclusão: Os resultados encontrados nesse estudo apontam que a realização de intervenção educativa mediada por cartilha é efetiva para promover melhora na percepção de riscos de queda de pacientes em internação hospitalar.

Palavras-chave: Fatores de risco; Acidentes por quedas; Educação em saúde; Tecnologias educativas; Enfermagem.

RESUMEN:

Objetivo: Analizar el impacto de la intervención educativa en la percepción de los pacientes hospitalizados sobre el riesgo de caídas y sus factores asociados.

Métodos: Se trata de una investigación casi experimental con 157 pacientes hospitalizados en una institución pública de nivel terciario en la región Norte del Estado de Ceará-Brasil. Los datos fueron recolectados antes y después de la intervención educativa mediada por un folleto sobre prevención de caídas. Se identificó el diagnóstico de enfermería Riesgo de caída y se aplicó la escala del Cuestionario de Concientización sobre el Riesgo de Caídas (FRAQ-Brasil). El análisis de los datos se realizó a partir de las pruebas de McNemar y Wilcoxon.

Resultados: En la prueba previa, los grupos fueron diferentes en cuanto a la percepción del riesgo de caídas (p<0,000) en el que el grupo con menor riesgo tuvo una mediana de respuestas correctas de 12 (rango intercuartílico = 9) mientras que el grupo de mayor riesgo de caídas tuvo una mediana igual a 14 (rango intercuartílico = 8). Sin embargo, en el post-test, los grupos se vuelven homogéneos en cuanto a la percepción de los factores de riesgo de caídas (p=0,676) con un aumento en la mediana del número de respuestas correctas en ambos.

Conclusión: Los resultados encontrados en este estudio indican que la realización de una intervención educativa mediada por folleto es efectiva para promover la mejora en la percepción de los riesgos de caída de los pacientes en hospitalización.

Palabras clave: Accidentes por Caídas; Factores de Riesgo; Educación en Salud; Tecnología Educacional; Enfermería.

INTRODUCTION

Falls are the unintentional result of the change of position of subjects to a level lower than their initial position, either when found on the ground or when there is a need for support[1]. Falls are adverse events responsible for significant morbidity and mortality related to care in hospitals and healthcare facilities. They represent a global public health concern and are considered the second leading cause of unintentional injury deaths[1,2].

Annual data from the Brazilian National Health Regulatory Agency (ANVISA - *Agência Nacional de Vigilância Sanitária*) on health care-related incidents show that from April 2019 to March 2020, approximately 17,000 falls were reported, most of which occurred in the hospital environment and contributed to the worsening of patients' clinical condition, increased hospitalization days and deaths[3].

Given this scenario and the negative consequences of this event for subjects, their families and hospital institutions, it is important that interventions aimed at preventing this incident are implemented[4]. Such interventions should include improvements in fall risk perception, since this perception has a direct impact on patients' compliance with prevention guidelines.

Among the intervention options that can increase patients' fall perception and their risk factors, health education stands out. In this care strategy, using educational technological resources is increasing, aiming at contributing to health communication, exchange of knowledge and knowledge necessary for training subjects for developing health-promoting actions. One of the technological resources available on the topic is a printed booklet "*Cuidado para não cair nessa*", which was built and validated, obtaining agreement from nurse judges regarding objectives, structure/presentation and relevance, and it was assessed as understandable by patients admitted to a medical clinic (CVI=0.98)[5].

When considering the possibilities of contribution of using this booklet in fall prevention, the clinical validity of this technology becomes necessary, in order to identify its effectiveness in improve perception among groups of patients who have different risk factors for this condition. In this regard, preventive and educational behaviors can be adapted, according to the particularities of such groups.

Among the tools available to assess fall risk, the North American Nursing Diagnoses Association International (NANDA-I) classification, which describes "Risk for falls" Nursing Diagnosis (ND), stands out. This ND includes risk factors for falls linked to the environment, to the cognitive and physiological state of patients, as well as to drug-related ones. Thus, it makes it possible to stratify patients into groups that have different amounts of risk factors.

Although the identification of risk factors in hospitalized patients, present in "Risk for falls" ND, has already been explored in literature[6,7], studies are needed that compare groups of hospitalized patients who have more risk factors, with a group with fewer factors, regarding fall risk perception[8].

Thus, when assessing hospitalized patients' fall risk perception before and after the application of the aforementioned educational technology, comparing them based on their risk factors, it is possible to assess the effectiveness of educational technology and support its application in educational interventions on fall prevention and its associated damages in hospital settings. Considering the above, the research aimed to analyze the impacts of an educational intervention mediated by a booklet on hospitalized patients' fall risk perception.

MATERIAL AND METHODS

This is a quasi-experimental, single-group, before-and-after study. The research was carried out from May to November 2019 at the medical-surgical clinic of a university hospital, reference in trauma, located in northern Ceará, Brazil.

The population consisted of patients who were hospitalized in the aforementioned clinic during the data collection period. Within this perspective, intentional non-

probabilistic sampling was used. Sample size was defined based on admissions to the medical-surgical clinic in the year prior to data collection, calculated using the formula for finite population. A confidence level of 95% was adopted, a sampling error of 5% and a prevalence of the event of 50%, which generated a final sample of 157 participants.

We included subjects admitted to the medical clinic under study, literate and obtaining a minimum score on the Mini Mental State Examination (MMSE). The cut-off points were considered: 21 for those with between one and three years of education; 24 for individuals between four and seven years of formal education; and 26 for people with more than eight years of education[9].

The MMSE was used in order to certify that all patients included had preserved cognition and were able to understand the printed educational technology as well as being able to answer the fall risk perception test questions. We excluded patients with hemodynamic instability, which could compromise their participation in the interview.

For data collection, we used: instrument for clinical-epidemiological characterization, consisting of patient identification and clinical data; a semi-structured checklist on "Risk for falls" ND, which was built by the researchers based on the risk factors present in the ND according to the NANDA taxonomy I (NANDA, 2018-2020)[10]; and the Falls Risk Awareness Questionnaire (FRAQ-Brazil), which assesses perception and knowledge level about falls, from 25 closed-ended questions and a total of 32 points.

Using the FRAQ-Brazil scale in this study is justified by the lack of validated instruments on fall risk perception in hospitalized patients. Given this limitation, eight questions were deleted from the original instrument, as they corresponded to fall perception in the home environment and risk factors that were not present in hospital settings. Therefore, the final version of the FRAQ-Brazil scale was applied with 17 questions. Thus, it was not possible to assign scores based on the scale scores; therefore, the absolute and relative frequencies of each question were considered.

In the recruitment of participants, after identifying patients' name and bed, there was an individual approach at the bedside to introduce the researchers and research objectives. Upon expressing interest in participating, literacy was verified and the MMSE was applied. Upon obtaining a minimum score of 18 points, there was a request to sign the Informed Consent Form (ICF), followed by the application of data collection instruments for pre-test.

After completing the instruments, the educational intervention with the booklet took place, carried out by a trained researcher and in a standardized way, with an average duration of 15 minutes. This moment occurred in a face-to-face meeting, without the presence of a companion, with one patient at a time, accommodated in their bed and the researcher in a chair at the bedside.

In that intervention, the importance of the topic was explained and, later, a booklet "*Cuidado para não cair nessa*" was made available, printed on A4 paper, in color, for reading. Thus, during material reading by participants, the researcher was at the bedside, available to answer any questions. Immediately after finishing reading, post-test was performed.

The collected data were typed and compiled in Microsoft Excel. Subsequently, IBM SPSS Statistics version 24 was used for statistical analysis. Non-compliance with the normality of continuous data was identified using the Kolmogorov-Smirnov test. McNemar's test was used to assess, in a paired manner, the FRAQ-Brazil responses before and after the educational intervention. The Wilcoxon test was also used to match the medians of correct answers from the FRAQ-Brazil between pre- and post-test. For analysis of categorical variables, Pearson's chi-square test was used.

The statistical association of clinical-epidemiological variables and the FRAQ-Brazil questionnaire was compared between two groups of patients, with different number of risk factors for "Risk for falls" ND[10]. When identifying risk factors for ND, it was possible to identify that the presence of these factors ranged from 0 to 27, among a total of 38 risk factors analyzed, with a mean of 5.36 and a median of 5, a value used to dichotomize the data, which was considered to define the groups according to a study by Chehuen-Neto et al. (2018)[8]. Thus, a group was composed of patients with up to five risk factors, which was compared to the group with patients with more than five factors. The significance level adopted was 5% and the confidence interval was 95%.

The research was approved by the Research Ethics Committee of the *Universidade Estadual Vale do Acaraú* (UVA), under Opinion 3,377,430/2018.

RESULTS

Of the 157 patients, 89 (56.6%) had up to five risk factors and 68 (43.3%) had more than five risk factors. There is a predominance of males, with a median age between 28 and 29 years, economically active and Catholic. Table 1 shows sociodemographic characteristics, in which it is possible to verify group homogeneity.

Table 1 - Description of patient sociodemographic characteristics. Sobral, CE, Brazil, 2019

| Variables/categories | Presence of risk factor | | | | p-value* |
| | Up to 5 factors present | | > 5 factors present | | |
	n	%	n	%	
Sex					
Female	30	33.7	19	27.9	0.440
Male	59	66.3	49	72.1	
Occupation					
Active	74	83.1	53	77.8	0.411
Inactive	15	16.9	15	22.2	
Marital status					
Married	30	33.7	26	38.2	0.557
Single	59	66.3	42	61.8	
Children					
Yes	46	51.7	36	47.1	0.678
No	43	48.3	32	52.9	
Religion					

	n	%	n	%	
Atheism	12	20.6	14	20.6	
Catholicism	63	64.7	44	64.7	0.494
Evangelism	14	14.7	10	14.7	
Education (years of study)					
0 to 8	41	46.1	23	33.8	
9 to 11	42	47.2	34	50.0	0.098
Over 12	06	6.7	11	16.2	
Origin					
Sobral	42	47.2	19	27.9	0.014
Macroregion	47	52.8	49	72.1	
Age (Median)	29 (74)		28 (48)		0.296

*Pearson's chi-square

Regarding patient health characteristics, an association was observed between the groups in subjective vision perception (p=0.042) and in self-reported health problems, such as hypertension (p=0.016), rheumatism (p=0.003), orthostatic hypotension (p=0.047) and urinary incontinence (p=0.044). There was a predominance of health problems in the group of patients with fewer risk factors for falls. Table 2 shows patient distribution according to their health characteristics.

Table 2 - Distribution of participants according to their health characteristics. Sobral, CE - Brazil, 2019

Variables	Presence of risk factor				p-value*
	Up to 5 factors present		> 5 factors present		
	n	%	n	%	
Reason for hospitalization					
Clinical	32	36.0	26	38.2	0.632
Traumatological	57	64.0	42	61.8	
Hospitalization length of stay (days)					
Up to 15	72	80.9	58	85.3	
From 15 to 30	13	14.6	6	8.8	0.522
> 30	4	4.5	4	5.9	
Vision perception					
Very good	12	13.5	16	23.5	
Good	58	65.2	30	44.1	0.042
Regular	15	16.9	14	20.6	
Bad	4	4.5	8	11.8	
Hearing perception					
Very good	19	21.3	21	30.9	
Good	61	68.5	40	58.8	0.577
Regular	8	9.0	6	8.8	
Bad	1	1.1	1	1.5	
Self-reported health problem					

	n	%	n	%	
Diabetes Mellitus	12	13.5	3	4.4	0.055
Hypertension	17	19.1	4	5.9	0.016
Rheumatism	11	12.4	0	0	0.003
Orthostatic hypotension	5	5.6	0	0	0.047
Urinary incontinence	5	5.6	0	0	0.047

*Pearson's chi-square

Of the 33 factors of "Risk for falls" ND, in 28 (84.8%) statistical differences were observed between the groups. The group of patients who had more risk factors (more than five) showed a higher amount in the 28 ND factors. Table 3 presents the relationship between the risk factors for "Risk for falls" ND identified in patients.

Table 3 - Distribution of risk factors for "Risk for falls" Nursing Diagnosis according to patient groups. Sobral, CE, Brazil, 2019

Risk factors for ND	Presence of risk factor				p-value*
	Up to 5 factors present		> 5 factors present		
	n	%	n	%	
In adults					
Age 65 or over	-	-	16	23.5	0.000
Lower limb prosthesis	-	-	10	14.7	0.000
Wheelchair use	-	-	11	16.2	0.000
Assistive device use	11	12.4	23	33.8	0.001
History of falls	28	31.5	47	69.1	0.000
Physiological					
Arthritis	2	2.2	6	8.8	0.063
Anemia	9	10.1	15	22.1	0.039
Insomnia	12	13.5	23	33.8	0.002
Postoperative patients	1	1.1	12	17.6	0.000
Diarrhea	-	-	7	10.3	0.002
Impaired gait	10	11.2	47	69.1	0.000
Impaired hearing	3	3.4	3	4.4	0.736
Impaired vision	5	5.6	10	14.7	0.055
Musculoskeletal disorders	2	2.2	11	16.2	0.002
Reduced strength in lower limbs	7	7.9	33	48.5	0.000
Poor balance	11	12.4	34	50.0	0.000
Urinary urgency	1	1.1	6	8.8	0.021
Orthostatic hypotension	-	-	6	8.8	0.004
Impaired physical mobility	6	6.7	15	22.1	0.005
Neoplasms	2	2.2	6	8.8	0.063
Incontinence	1	1.1	3	4.4	0.195
Change in blood glucose level	4	4.5	10	14.7	0.026
Foot condition	-	-	12	17.6	0.000
Acute	-	-	3	4.4	0.045
Environmental					
Cluttered pathways	16	18.0	46	67.6	0.000

Little known scenario	9	10.1	17	25.0	0.013
Environmental hazards	-	-	6	8.8	0.004
Poor lighting	18	20.2	38	55.9	0.000
Insufficient non-slip material in bathroom	28	31.5	40	58.8	0.001
Use of immobilizers	-	-	9	13.2	0.000
Use of loose rugs	-	-	8	11.8	0.001
Pharmacological agents					
Pharmacological agent	43	48.3	58	85.3	0.000
Alcohol use	5	5.6	11	16.2	0.030

*Pearson's chi-square

In pre-test, there was a difference between the groups (p<0.000), since the group with up to five risk factors for falls had a median of correct answers of 12 (interquartile range=9) while the group with more than five factors had a median equal to 14 (interquartile range=8). However, in post-test, the groups became homogeneous in terms of perception of risk factors for falls (p=0.676): the median of correct answers in the group with less risks was 16 (interquartile range=2), and in the other group, 17 (interquartile range=3).

Table 4 presents the results of a comparison between patients' fall risk perception before and after the application of the educational intervention with the booklet.

Table 4 - Comparison of correct answers to questions about fall risk perception (FRAQ-Brazil) before and after the educational intervention mediated by the booklet. Sobral, CE, Brazil, 2019

	Presence of risk factor								
Risk for falls	**Up to 5 factors present**				**> 5 factors present**				p-value*
	Before		**After**		**Before**		**After**		
	n	%	n	%	n	%	n	%	
Older adults (65 years or older) are more likely to fall than younger adults (True)	87	97.8	89	100.0	68	100.0	66	97.1	-
It is possible to modify their activities to prevent falls (True)	79	88.8	89	100.0	58	85.3	66	97.1	0.000
Falls make people less confident of moving (True)	79	88.8	87	97.8	59	86.8	65	95.6	0.001
Older age increases risk of falling (True)	89	100.0	89	100.0	64	94.1	68	100.0	0.125
Using a walker correctly can increase the chance of falling (False)	29	32.6	77	86.5	48	70.6	62	91.2	0.000
Which type of footwear is the safest (Sneakers)	30	33.7	89	100.0	32	47.1	60	88.2	0.000
Having a stroke affects the chances of falling (True)	75	84.3	89	100.0	57	83.8	64	94.1	0.000
Deafness increases the chances of falling (True)	55	61.8	80	89.9	43	63.2	63	92.6	0.000
Ear problems (including examples	71	79.8	88	98.9	56	82.4	6	97.1	0.25

Statement	n	%	n	%	n	%	n	%	p*
such as dizziness and ear infections) affect chances of falling (True)							6		0
Alcohol use increases risk of falling (True)	88	98.9	89	100.0	64	94.1	66	97.1	0.000
A person who takes multiple medications is more likely to fall than a person who takes only one medication (True)	75	84.3	89	100.0	62	91.2	68	100.0	0.031
Staying physically active decreases fall risk (True)	34	38.2	89	100.0	59	86.8	68	100.0	0.000
Going to the bathroom at night can lead to falls (True)	75	84.3	86	96.6	54	79.4	65	95.6	0.000
How better to leave bed (Sit on the bedside for a minute)	19	21.3	88	98.9	68	100.0	68	100.0	0.000
There is a greater chance of injury when one has weak or brittle bones (True)	86	96.6	89	100.0	65	95.6	67	98.5	0.125
A person has a greater chance of falling if they are afraid of falling (True)	67	75.3	81	91.0	54	79.4	65	95.6	0.000

*McNemar's test

DISCUSSION

Participants showed homogeneity in their sociodemographic characteristics. There was a predominance of males in both groups, corroborating findings from other studies carried out in northeastern and southern Brazil, which sought to identify risk factors for falls in adult patients in hospitals and found a majority in males[6,11]. Thus, there is a need for greater attention regarding fall risk in male patients as well as the relevance of nursing interventions aimed at this audience.

There was also similarity in the level of education of the patients between the groups in which most had completed elementary or high school. This result contributed to reduction of bias in risk perception assessment by patients, because education level is a characteristic that influences risk perception and understanding the educational interventions carried out by professionals[12].

As for the length of stay, most patients in both groups had been hospitalized for less than 15 days. A study carried out in northeastern Brazil, which sought to assess fall risk in hospitalized patients, showed an average hospital stay of eight days[6]. Related to these results, another study in Lebanon found that the longer the patient stays in the hospital, the greater the risk for falls (OR=3.2; $p < 0.01$)[13]. These findings point to relevance in the implementation of health education, surveillance and more rigorous taking of preventive measures with patients who have more days of hospitalization.

Although an association was found between groups, vision perception was positive. Most participants considered their vision very good and good, and hearing was assessed satisfactorily. Vision and hearing impairment should be assessed in patients who remain hospitalized, as they are significant and independent risk factors for falls[14]. This fact points to the need for this assessment to be inserted into the hospital

routine and to consist of variables present in the nursing process' data collection instruments.

This study also showed significant differences in self-reported health problems between the groups: patients with less than five risk factors had a higher number of comorbidities, such as hypertension, rheumatism, orthostatic hypotension and urinary incontinence. A similar study found that many participants had associated diseases, but no correlation was observed with "Risk for falls" ND[6]. Therefore, there is a need for studies that analyze chronic conditions with a predisposition to falls in hospitalized adult patients.

The factors related to "Risk for falls" ND showed significance in the vast majority of variables, according to the division of groups by risk factors. In addition, it was possible to observe that most variables influenced this result. The highlights were age over 65 years, lower limb prosthesis, wheelchair use, history of falls, postoperative patients, impaired gait, reduced strength in lower limbs, poor balance, foot conditions, cluttered pathways, poor lighting, use of immobilizers and pharmacological agents.

Based on these results, it is observed that many factors that cause falls can be potentially avoidable, target of patient surveillance and monitoring, by nursing, when identified early.

The importance of using the ND to identify risk factors was observed in an Italian study that analyzed the admission of 100 patients to an intensive care unit and their most frequent ND and whose results showed that in 51% of investigated cases "Risk for falls" ND were present. Additionally, it was one of the ND with the lowest number of nursing interventions implemented[15].

Research carried out in a medical clinic with 155 participants identified the factors associated with fall risks in hospitalized patients, the main risk factors were: assistive device use, impaired physical mobility, insufficient non-slip material in bathroom and little known scenario[6].

In this context, the importance of developing interventions to prevent falls is highlighted, based on risk factors present in the ND, including those based on the Nursing Interventions Classification (NIC), which includes ten activities related to patient and family guidance and teaching, which include using technologies in educational interventions.

Patients' perception of the relationship between fall risk and the environment and their health conditions contributes to their engagement in prevention programs. The Budapest Declaration on health-promoting hospitals encourages patient participation in the prevention and recognition of diseases that are exposed in tertiary care services. Therefore, by observing the impacts of participation in educational interventions on patients' perception of these risks, it is possible to improve the results of fall prevention strategies in hospital settings. In this way, interventions become long-lasting and sustainable over time, even with the continuous introduction of new prevention initiatives[16].

A study conducted in the United States found that risk perception measures were positively associated with fall prevention behavior[17]. Another study also conducted in the United States, on fall risk in cancer patients, observed a disparity between their

perceptions and the real risk for falls in the hospital. However, after the implementation of an educational intervention program with videos and printed materials, there was a significant improvement in fall risk perception[18].

Thus, the present study reinforces the evidence available in the literature on the positive effects of educational interventions on fall risk perception, since most questions on the FRAQ-Brazil scale showed significant improvements. As for the results of intergroup analysis, patients with a lower number of risk factors presented, in pre-test, a lower median of correct answers in most questions. After the educational intervention, both groups had higher correct scores, which had medians of correct answers that were similar to each other, which corroborates the positive impacts of the educational intervention mediated by a booklet, in improving fall risk perception.

Among the questions with associations between the groups, the perception that patients can prevent falls, if they change their risk activities, stood out. This finding may lead to a reduction in falls at the service, since patients often take unnecessary risks, such as leaving bed and going to the bathroom without assistance. Consequently, by recognizing the importance of positive transformation of their practices, they will be able to be involved and comply with prevention strategies[19].

Risk perception about using assistive devices had a positive change after the educational intervention so that patients could understand that the correct use of this instrument is not a risk factor, but as support for safe walking and with less chance of falling.

The type of safe footwear to prevent falls was the subject of doubts among the participants before the educational intervention, mainly because the shoes commonly used in hospital services favor the occurrence of falls. A cohort study in southern Brazil, with 193 older adults, showed a relationship between wearing inappropriate footwear and occurrence of falls[20]. In view of this, measures to raise awareness about the use of suitable shoes should be implemented as a fall prevention strategy.

Keeping physically active during hospitalization was not considered a fall prevention strategy by patients. In most hospitalizations, regardless of time, patients remain for long periods of bed rest or with reduced physical activity. Consequently, this inactivity can cause a significant decline in functional capacity and contribute to falls risk[21].

Research carried out in the Netherlands with 524 hospitalized patients showed that only 35% of the sample performed exercises during hospitalization. Those who did not perform stated that they prefer supervised exercise therapy to maintain physical activity during hospitalization[21]. After the educational intervention, patients showed that they understood the benefits of exercises to strengthen their muscles and prevent falls. These results confirm the importance of information on this topic, as well as the planning of interventions with physical exercises consistent with patients' possibilities, planned from a multidisciplinary approach.

A practice often associated with the occurrence of falls is the incorrect way of leaving bed, quickly and without assistance. This habit can cause low blood pressure, symptoms of fainting, dizziness, confusion or blurred vision, especially after a long period in bed[22]. Therefore, the importance of the impact on the perception of this risk by patients in both groups is highlighted.

There was an association of "Risk for falls" ND perception with fear of falling variable. The feeling of fear reduces the reception of stimuli and increases postural instability. This condition, associated with gait impairment and other comorbidities, make patients more vulnerable to falls[8]. A systematic review identified that fear is a risk factor for falls, especially in older patients with a history of falls[23]. Therefore, interventions should be implemented to encourage confidence in walking in patients who have suffered falls during hospitalization.

There is an important improvement in patients' perception of the causes of falls in the hospital environment, which are mostly modifiable and preventable with the adoption of prevention attitudes. It is considered that most patients do not understand the risks of falls that they are exposed to in hospital settings. Thus, it is essential that the nursing team is trained and willing to offer patients preventive education, which, in addition to promoting increased awareness, encourages the active participation of patients. Thus, prevention will become more effective, as individuals perceive their vulnerabilities and reduce their chances of falling.

This study presents relevant results that expand knowledge about the positive impact of educational interventions on risk perception in hospitalized adult patients. However, limitations include the fact that illiterate patients were excluded, with cognitive deficits and mental confusion, and the fact that collection on risk perception took place without longitudinal follow-up.

CONCLUSION

The results found in this study indicate that carrying out an educational intervention mediated by a booklet promotes an improvement in risk fall perception in hospitalized patients. Patients with a lower number of risk factors showed lower perception in pre-test, however, after the health education strategy, the groups showed an increase in perception and were similar to each other. These findings suggest that the provision of guidance on fall prevention is effective in involving patients in the care process; therefore, this evidence can help in planning strategies to prevent hospital falls, with health education inclusion.

It is also noteworthy that identifying "Risk for falls" ND made it possible to assess the risk factors present in each patient and to identify individuals more prone to falls, due to the greater number of factors present, referring to environmental, physiological and pharmacological aspects. Thus, using this tool in clinical nursing practice allows the planning of educational interventions aimed at each subject's profile and existing risk (low, moderate, high), in addition to contributing to improvement nursing care and patients' fall perception and its associated factors in the hospital environment.

Thus, it is important that nurses expand their participation, as a health educator, in fall prevention and safe environment maintenance, based on patient assessment and implementation of educational interventions mediated by educational technologies. Hence, new studies are suggested that aim to use other types of technologies in patient orientation. Further studies on risk perception for falls in populations with different characteristics are recommended as well as the correlation of fall perception with patients' intrinsic factors.

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