● **Original article**

REPORTING OF INPATIENT FALLS BEFORE AND AFTER IN-SERVICE TRAINING*

Suelen Reiniack[1], Cristiane Ferraz da Silva[2], Marisol da Paz[3], Karinne Cristinne da Silva Cunha[4]

ABSTRACT: Before-after study aimed to identify the records and the profile of inpatient falls, promote and assess an Educational Technology conducted from April 2015 to February 2016, in the surgery center of a public hospital in Rio de Janeiro. Prior to in-service training one fall was properly recorded (33.3 falls per 1,000 patients-day) in September 2015. After a six-month period, it was found that six falls of inpatients were properly reported (162.2 falls per 1,000 patients-day). Of these patients, four were male individuals, with a mean age of 57.2 years, four were oriented, four fell down from a standing position, one patient fell from the bed andone fell from a chair. Also, two falls caused harm. Lack of reporting and probable underreporting was observed. There is no routine of prevention and no permanent training of the staff, and it is absolutely necessary to implement a scale of assessment of risk of falls in the institution.
DESCRIPTORS: Nursing; Educational technology; Health education; Patient safety.

NOTIFICAÇÃO DE QUEDA DO PACIENTE CIRÚRGICO ANTES E APÓS TREINAMENTO EM SERVIÇO

RESUMO: Estudo tipo antes-depois com objetivo de identificar registros e perfil de queda de paciente, executar e avaliar uma tecnologia educacional. Realizado no período de abril de 2015 a fevereiro de 2016, em uma unidade de internação cirúrgica de um hospital público no município do Rio de Janeiro. Verificou-se o registro de uma queda antes do treinamento (33,3 quedas por 1.000 paciente-dia) no período de setembro de 2015. Após um período de seis meses, verificou-se o registro de seis quedas notificadas adequadamente (162,2 quedas por 1.000 paciente-dia). Destas, quatro do sexo masculino possuíam em média 57,2 anos de idade, quatro estavam orientados, quatro foram da própria altura, uma do leito e uma da cadeira, sendo que duas obtiveram dano. Observou-se falha de notificação e prováveis subnotificações. Não há rotina de prevenção e nem formas de capacitação continuada, sendo imprescindível a implantação da escala de avaliação do risco de queda na instituição.
DESCRITORES: Enfermagem; Tecnologia educacional; Educação em saúde; Segurança do paciente.

NOTIFICACIÓN DE CAÍDA DEL PACIENTE QUIRÚRGICO ANTES Y DESPUÉS DE CAPACITACIÓN EN SERVICIO

RESUMEN: Estudio tipo antes-después objetivando identificar registros y perfil de caída de pacientes, ejecutar y evaluar una tecnología educativa. Realizado entre abril de 2015 y febrero de 2016, en unidad de internación quirúrgica de hospital público del municipio de Rio de Janeiro. Se verificó el registro de una caída antes de la capacitación (33,3 caídas cada 1000 pacientes-día) durante setiembre de 2015. Pasado un período de seis meses, se verificó registro de seis caídas correctamente notificadas (162,2 caídas cada 1000 pacientes-día). De estas, cuatro del sexo masculino, media etaria de 57,2 años, cuatro estaban orientados, cuatro fueron desde la propia altura, una desde el lecho, y una desde la silla, ambas con daño. Se observó falta de notificación y probables subnotificaciones. No existe rutina de prevención ni formas de capacitación continua, resultando imprescindible la implantación de la escala de evaluación del riesgo de caída en la institución.
DESCRIPTORES: Enfermería; Tecnología Educacional; Educación en Salud; Seguridad del Paciente.

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[1]Nurse. Student of Specialization inInternal Medicine and Surgery. Hospital Federal da Lagoa. Rio de Janeiro, RJ, Brazil.
[2]Nurse. Master in Health and Technology in the Hospital Environment.Universidade Federal do Estado do Rio de Janeiro.Rio de Janeiro, RJ, Brazil.
[3]Nurse. Specialist in Health Quality and Safety. Hospital Federal da Lagoa. Rio de Janeiro, RJ, Brazil.
[4]Nurse. PhD in Neuroimmunology. Professor of Nursing and Post-graduation in Health and Technology in the Hospital Environment. Universidade Federal do Estado do Rio de Janeiro.Rio de Janeiro, RJ, Brazil.

Corresponding author:
Suelen Reiniack
Hospital Federal da Lagoa
R. Mena Barreto, 151 - 22.271.100 - Rio de Janeiro, RJ, Brasil
E-mail: sukaa.r@gmail.com

● INTRODUCTION

Concern with quality and patient safety in health services has increased, and it is known that half of the incidents are avoidable and may have a negative impact on patients and their families, institutions and society. Hospitalization, increases the risk of falling because the patients are kept in unfamiliar environments, are affected by diseases that predispose them to fall and undergo multiple therapeutic procedures and are supposed to take many different drugs[1-2].

For the monitoring and prevention of harm in health care, the National Program of Patient Safety (PNSP) wascreated in 2013 by Ordinance no 529, the same year the six International Patient Safety Goals (IPSG) of the World Health Organization were established. The sixth goal, aimed to reduce the Risk of Patient Harm Resulting from Fall, has made reporting of Adverse Events (EA) by health services compulsory[3].

In 2013, the Ministry of Health createdthe Protocol for Prevention of Falls with the purpose of reducing the occurrence of falls and harm, through the implementation of measures aimed to assess patient's risks, ensure multidisciplinary care and a safe environment for promoting the education of patients, families and professionals[2].

Fall is defined as "the unintentional displacement of the body to a lower level than the initial position, resulting or not in damage[2].

Patient safety aims to reduce the risk of unnecessary harm to health care down to a minimum acceptable level. Harm implies impairment of structure of function of the body and/or any deleterious effect arising from, including disease, injury, suffering, disability and death, and may be physical, social or psychological. On the other hand, incident is an event or circumstance that could have resulted, or did result, in unnecessary harm to a patient[2]. Adverse event (AE) or harmful incident is an incident that results in harm to a patient.

The use of indicators and process monitoring is essential to reduce the impact of harm to health systems, because falls can have a negative impact on patient mobility, and result inanxiety, depression and fear of falling again, increasing the length of hospital stay and health care costs. Therefore, in addition to the implementation of new routines and protocols, educational strategies for the dissemination of safety culture are necessary[1-2].

An example of educational strategy is Educational Technology (TE), characterized as an ethical practice of facilitating learning and improving performance through the creation, use and organization of processes and technological resources, thus contributing to educational advancement. It is not limited to the use of equipment, involving also logical organization of systematically observed, understood and shared activities[4].

The organizationsare supposed to facilitate the reporting of incidents through specific adverse event reporting forms, as these provide valuable information to the Patient Safety Nucleus (NSP). The main purpose of reporting is increasing patient safety.

The NSP of the institution where this study was conducted was created in 2014. The hospital established its own protocol for the reporting of inpatient falls in 2013: a nurse responsible for ensuring patient safety improvement actions, e.g. investigation of adverse events reported on the form.

The NSP also detected unsatisfactory use of the specific AE reporting form. Most notifications were recorded on the diary for recording events in the surgery center. Therefore, this study focused on the reporting of inpatient falls.

The present study aims to identify the records and profile of inpatient falls in a surgery center, perform and assess one educational technology (ET) on the reporting of inpatient falls.

● METHODOLOGY

This is a before-after study, with a quantitative approach, conducted from April 2015 to February 2016, in a surgical unit of a public hospital in the city of Rio de Janeiro, which includes General surgery, Vascular surgery, Proctology and Neurosurgery. These units are destined for preoperative preparation and postoperative care for elective surgeries, with capacity for 28 beds, for SUS patients above 18 years old.

The institution does not use any specific scale to assess the risk of falls. It is focused on fall prevention interventions. Yellow wristbands are placed on patients at risk for falls upon admission, as follows: patients under the age of five, over sixty-five years old, confused, agitated, with neurological disorder, sedated or with gait difficulty.

The sample consisted of all the records of inpatient falls that occurred from April 2015 to February 2016 in the surgery sector. The rate of inpatient falls was obtained from the hospital's specific adverse event reporting form, as well as notes made by the nursing staff on the diary kept for recording events at the surgery center.

During data collection, an educational technology (ET) on inpatient fall preventionwas constructed, focusing on the process of adverse event reporting for the nursing professionals of this study setting. Thus, in September 2015, the Permanent Education Service, with the NSP, carried out an in-service training for nursing professionals, based on the ET constructed by the authors of the present study.

In the construction of the educational technology (TE), a lesson plan was adopted that contained the following steps: topic addressed, justification, objectives, methodology, bibliography, estimated time (duration), plan for further assessment, including records and forms for the reporting of inpatient falls. Thus, the ET was built in multimedia format as a Windows PowerPoint 2013 presentation containing 30 self-explanatory illustrative slides.

The content selected addressed the categories based on the Protocol for Prevention of Falls released by Brazil's Ministry of Health in 2013: National Program of Patient Safety; Fall Prevention Protocol; Definition of concepts of Fall, Incident, Harm and AE; Extrinsic and Intrinsic Contributing Factors; Prevention based on risk factors with Universal and Individual measures; Notification and flow chart of hospital reporting[2].

The educational technology (ET) was administered in the beginning of September 2015, in the workplace and during work hours, through a dialogic lecture that considered the professionals' previous knowledge. A meeting of 45 minutes per shift was required over a period of three days and three nights to cover all the shifts. The study involved 38 nurses and nursing technicians. Some professionals could not participate in the study because they were away onsick leave or vacation.

To compile the data, after the completion of the educational technology (ET), an active search was carried out for six months to detect anychange or increase in the number of records of inpatient falls, both on the hospital's specific AE reporting form, and in the diary forthe recording of events in the surgery center.

For statistical measurement, the rate of falls per patients-day was calculated and the profile of the reported falls was characterized. The rate of falls perpatients-day was obtained through the Protocol for Prevention of Falls (2013) of the Ministry of Health: [(number of events/number of patients-day.) * 1,000].

The data was arranged in tables for subsequent descriptive analysis of the results, in absolute values and percentages.

The research was approved by the Research Ethics Committee of Universidade Federal University do Estado do Rio de Janeiro, on October 30, 2014, under Statement No. 850.633.

● **RESULTS**

Active search showed that in the April-August 2015 period, prior to the implementation of the ET, one fall was reported, though not appropriately on the specific AE datasheet (form), as shown in Table 1.

Table 1 - Record of inpatient falls in the surgery center, from April 2015 to February 2016. Rio de Janeiro, RJ, Brazil, 2016

Falls	Before implementation of the Educational Technology	After implementation of the Educational Technology
Record on the diary for the recoding of events in the surgery center	1	4
Appropriate reporting on the hospital's specific AE reporting forms	0	6
Total Falls	1	10
Average number of Inpatients-day	9.6	10
Average Rate of the Indicator of Falls	33.3 (3.33%)	162.2 (16.22%)

Source: Livro de Ordens e Ocorrências ((Diary for recording events in the surgery center) and *Instrumento de Notificação de EA da Instituição* (hospital's specific AE reporting form)

Following the administration of the educational technology (ET), from September 2015 to February 2016, four inpatient falls were recorded in the diary kept for recording events and six inpatient falls were properly reported on the hospital's specific AE reporting form. Thus,during the study period 10 inpatient falls were observed.

Of these ten falls recorded after the implementation of the ET, three occurred in September and were recorded only on the diary for the reporting of events in the surgery center. Two inpatient falls were recorded in November and four other falls, in December, and all of them were properly recorded on the specific AE reporting form. The last analyzed fall occurred in February 2016 and was recorded only on the diary kept for recording events in the surgery center.

An average 33.3 falls per 1,000 patients-day (3.33%) was obtained before the completion of the educational technology (ET) and, after ET, 162.2 falls per 1,000 patients-day (16.22%). The increase in the rate of falls after implementation of the ET may not necessarily indicate increase in the number of inpatient falls, but rather an improvement in the active search system of adverse event reporting, as well as greater commitment of nursing professionals with AE reporting.

In the study period, after the implementation of the ET, six falls were properly reported on the specific AE reporting form to the NSP, and there weresome characterizations of their profile, as shown in Table 2.

Table 2 - Characteristics of inpatient falls in the surgery center from September 2015 to February 2016. Rio de Janeiro, RJ, Brazil, 2016 (continues)

Characteristics	Number of inpatients (n)	Percentage (%)
Gender		
Male	4	66.7
Female	2	33.3
Age		
Male	65.7 years	Total average
Female	40 years	57.2 years
Mental Status		
Oriented	4	66.7
Disoriented	2	33.3
Site of the Fall		
Fall from the bed	1	16.7
Fall from a chair	1	16.7
Fall from a standing position	4	66.6

Consequence of the Fall		
No harm	4	66.7
With harm	2	33.3

Source: Patient Safety Nucleus Reporting Instrument

Analysis of the profile of the six inpatient falls properly reported on the specific AE reporting form showed that four of them concerned male patients with a mean age of 57.2 years. In two of the falls, the patients were disoriented. In four falls the patients fell from a standing position, in one fall the patient fell from the bed and in another fall, from the chair. Two falls caused harm.

We noticed that the falls reported on the specific AE reporting form were not correctly recorded. There were errors in the description of the event, as well as incomplete information.

● DISCUSSION

Assessment of risk of falls should be made upon patient admission and on a daily bases with the use of a tool suitable to the profile of the patients of the institution. Fall risk assessment tools are not universal. Also, despite their benefits, they have operational and methodological limitations. These tools allow identifying each patient's fall risk factors, assisting the nursing staff in the selection of the appropriate fall prevention interventions[2].

Thus, we stress the importance of effective communication at all levels of the health care team to prevent underreporting of events and promote the improvement of patient quality and safety in health services.

In view of the aforementioned, the use of multimedia format (slides and visual images) in the construction of the educational material is very representative, allowing better understanding and favoring memorization of the information conveyed. This construction helps illustrating nursing procedures and routines in a modern and realistic way, which is meaningful. The proposed objectives must follow a logical sequence, with a self-explanatory and dynamic approach, using simple, clear and concise language that can be easily understood [5].

The number of notifications on the database prior to the implementation of the educational technology (ET) suggested that the non-use of the specific AE reporting form might have been a consequence of lack of training or lack of knowledge of the institution's protocol for falls.

After the implementation of the ET, nursing adherence to the specific AE reporting forms was unsatisfactory. In the last month of active search, February 2016, one inpatient fall was reported only on the diary for events in the surgery center, and there was no appropriate report of this fall on the specific AE reporting form. We emphasize the importance of continuing education to encourage the recording of falls on the specific AE reporting form, and correct completion of this form.

Health professionals may feel discouraged to adhere to the recommendations of the institution's NSP. Other factors that may have an impact on poor adherence to inpatient fall recording are understaffing, safety cultureand structural factors of the institution.

Thus, educational practices play an important role in health education actions, guidance and encouragement to the health staff, seeking improvements in processes, minimization of risks and the strengthening of safe practices. In addition to continued education for health professionals, suitable work conditions are also necessary to enable the sharing of responsibilities and hat make possible the sharing of responsibilities and an open management opinions, so that the entire team becomes aware of the importance of patient safety [6-7].

It is also necessary to face and overcome the resistance of some health professionals to these practices. Such opposition may be due to ignorance or little concern with the subject. Also, the effectiveness and impact of educational actions should be systematically assessed to identify the

factors that impact the performance of health professionals [8].

The nursing team must be totally committed to appropriate AE reporting. However, underreporting is frequent and can be associatedto reduced personnel and lack of time to record care activities and the occurrence of AE. Other aspects can also be involved, such as lack of physical, structural and material resources, limited access to computers, monotonous, unexciting and repetitive educational practices, among others [9-10].

It is necessary to implement patient safety indicators to assist the monitoring of AE and errors occurred during hospitalizations. These indicators are valuable tools to help identify areas that need more research, in order to improve the quality of care provided to patients. Data from patients' records and the used to report inpatient falls can be used [2].

Fall rate is calculated by dividing the total number of falls by the number of patients-day and multiplying by 1,000. This indicator can also be monitored with the use of a control diagram for the construction of the historical series of the event and for setting goals and evaluation criteria (2). In this study, 162.2 falls per 1,000 patient-days were obtained after implementation of the ET.

The desired rate must be low, since these rates are associated with greater use of preventive measures aimed to reduce the incidence of falls. In developed countries, the rate of inpatient falls ranged from three to five falls per 1,000 patients-day. A study conducted in São Paulo showed a fall rate of 1.45 per 1,000 patients-day, considered low due to the implementation of a protocol for the management of falls[2].

A large hospital in Rio Grande do Sul implemented the quality indicators of fall incidence, setting the goal of ≤ 2 falls per 1,000 patients-day/ month. Other studies showed different fall rates ranging from 1.4 to 13.0 falls per 1,000 patient-day. A more recent study in the cardiology department of a hospital in São Paulo found an incidence of 2.04 falls per 1,000 patients-day [11-12].

The profile of the six falls in the specific AE reporting form submitted to the NSP was identified in the NSP: 66.7% of the patients who suffered falls were males and 33.3% were females, corroborating data from other studies that identified a higher prevalence of falls in male individuals, including one that emphasizes a predominance of 59.7 of falls among males [12-13].

The mean age of patients who suffered falls was 57.2 years, with 65.7 years for men and 40 years for women, in contrast with other studies. These suggest that elderly are at higher risk for falls, due to the natural and gradual aging process, which involves physical changes, e.g. loss of strength, lack of muscle coordination, cognitive disorders and medical procedures, as well as the concomitant use of different drugs that result in greater vulnerability to falls [13]. Includes up here another study that shows that 53% of falls occurred in patients over 65 years [14].

However, in the neurology and neurosurgery services, the risk of fall is greater regardless of age, occurring twice as often among neurological patients. These patients have risk factors such as impaired consciousness, impaired mobility, orthostatic hypotension, bladder or bowel disorders, sensory deficits, and previous history of falls. An incidence of 28% of harm caused by fallswas observed in the neurology and neurosurgery services, and an incidence of 33.6% of harm was found in other hospital units[14].

Falls are more frequent in hospital units with higher concentration of elderly patients: neurology and rehabilitation. Also, a higher percentage of falls was detected in long-term care units [2], which differ from the surgery center of the present studycharacterized by short stay and high turnover of patients.

Most falls involved patients who had no mental status impairment: 66.7% of the patients were lucid and oriented at the time of the fall. Some studies indicated that only 19.6% of the patients who fell had decreasedlevel of consciousness, and most of them during the postoperative period [14].

This research corroborates the fact that oriented patients are more susceptible to falls when out of bed because they do not ask for help to perform some activities such as those related to personal hygiene, and get out of bed or move back to bed alone, often climbing over the rails [15-16].

At the time of the fall, 16.7% of the patients were in bed, 16.7% sitting on an armchair and 66.6% in the standing position. Such data is consistent with a study that found that 64.2% of falls occur when the patient is standing [12].

Analysis of the consequences of falls showed that 33.3% caused harm to the patients, being classified as cut-contusion wounds in the lower limbs, requiring sutures, and associated with the physical environment due to damaged equipment, that is, malfunctioning bed brake locks. Some studies indicate that falls represent 30% to 50% of these injuries, and 6% to 44% of these patients suffer serious harm, such as tissue trauma of different intensities, non-scheduled removal or disconnection of different therapeutic artifacts, emotional disorders such as anxiety, depression, and fear of falling again. These occurrences result in worsening of clinical conditions, death, longer hospital stay, higher costs of treatment and patient disbelief in nursing services[2,17].

Falls are usually associated with factors related to the individual and the physical environment. Patient-related factors include advanced age, recent history of falls, reduced mobility, urinary incontinence, drug use, and postural hypotension. Some environmental and organizational factors include uneven floors, objects left on the floor, inadequate height of the chair, insufficient and inadequate human resources[2].

● CONCLUSIONS

The study suggests that educational technology can be adopted as a strategy to increase AE reporting.

A patient safety culture should be disseminated in the referred institution, and this is one limitation of this study. The reporting of inpatient falls was considered unsatisfactory, sinceno appropriate routinefall prevention measures are adopted, and training is not delivered in the hospital on a continuing basis. The inpatient fall reporting system was deficient, and some events were probably underreported. The implementation of a fall risk assessment tool in the daily routine of the institution is essential.

Theshort period for collecting data on inpatient fall reporting and the low number of falls recorded in this period is one limitation of the present study, indicating the need for longer-term studies in the same setting.

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