Incidence of falls and preventive actions in a University Hospital

Incidência de quedas e ações preventivas em um Hospital Universitário

Incidencia de caídas y acciones preventivas en un Hospital Universitario

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ABSTRACT

Objective: Describing the incidence of falls and its relation with preventive actions developed in a Brazilian university hospital. **Method:** A retrospective longitudinal study. Hospitalized adult patients in the clinical, surgical, psychiatric and emergency units who suffered a fall in the institution, and who had the event notified in the period from January 2011 to December 2015 were included in the study. The data were collected from the institution's management information system and analyzed in the SPSS statistical program. **Results:** There were 2,296 falls, with a mean incidence of 1.70 falls/1,000 patients per day. An increase in the incidence of falls was observed in the period from 2011 (1.61) to 2012 (2.03). In the following years, the incidence of falls decreased from 1.83 falls/1,000 patients per day in 2013 to 1.42 falls/1,000 patients per day in 2015. The incidence of falls accompanied an implementation of preventive actions, suggesting the impact of such interventions in reducing the event occurrence. **Conclusion:** The findings demonstrate the importance of implementing preventive interventions in reducing the incidence of falls in hospitalized patients.

DESCRIPTORS

Accidental Falls; Inpatients; Nursing Care; Accident Prevention; Patient Safety.

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INTRODUCTION

A fall is defined as an event which results in a person coming to rest inadvertently on the ground or floor or other lower level, excluding intentional position changes to lean on furniture, walls, or other objects[1]. It represents one of the main safety incidents in the hospital environment, accounting for two out of five events related to patient care[2-3].

The negative repercussions of falls affect patients and institutions and are related to the lesions resulting from the event, which occur in approximately 30% to 50% of the cases[2-4]. The main consequences related to falls with damage include limitations and/or physical incapacities, worsening of clinical condition, emotional changes, increased length of hospital stay and hospital costs, higher hospitalization and discharge rates for geriatric homes, as well as dissatisfaction and skepticism regarding quality of care, which negatively affects health management, along with ethical and legal implications[5-8].

Hospitalized patients are at increased risk of falls due to an unknown environment, which may increase the impact of conditions such as dementia, incontinence, balance problems, strength, mobility, and vision. In addition, their unfavorable clinical situation such as the presence of acute and chronic diseases and polypharmacy also predisposes them to falls in the hospital environment, which is known to be a multifactorial event[4].

Given this scenario, the prevention of falls has become a priority issue in the area of health worldwide, and it is one of the international safety goals of the World Health Organization (WHO) and one of the protocols of the National Patient Safety Program (PNSP – *Programa Nacional de Segurança do Paciente*)[8-9].

Following this trend, hospital institutions have been developing strategies to prevent falls and injuries through care policies and protocols. This includes the monitoring and follow-up of events through the use and analysis of indicators such as the incidence of falls, which allows for constructing a historical series to assist in the planning and implementation of preventive interventions for hospitalized patients[3,8,10].

However, in spite of several initiatives aimed at the prevention of falls and the risk management of these events in hospital institutions, the studies that present data on the incidence of falls in Brazilian hospitals are still scarce, as well as the results of preventive actions for this indicator[2-3,10-11].

Thus, this study aims to describe the incidence of falls and their relationship with preventive actions developed in a Brazilian university hospital.

METHOD

This is a retrospective longitudinal study conducted in a large university hospital in the South of Brazil, accredited by the Joint Commission International, which has 843 beds. The study population consisted of adult patients hospitalized in the clinical, surgical, psychiatric and emergency units comprising a total of 528 beds, in the period from January 1, 2011 to December 31, 2015. The selected period is due to the fact that as of 2011, the indicator incidence of falls, which previously represented only falls from the bed and stretcher, began to consider all kinds of events (from the person's own height, from the toilet, a chair, etc.). In addition, a project with the goal of implementing a fall prevention protocol and accompanying measures of this event was also started in 2011.

Clinical and surgical hospitalization areas comprise 14 units and 445 beds, the psychiatry unit has 36 beds, and the emergency area has 47 beds. The goal for the incidence of falls in the institution is ≤ 2/1,000 patients-day.

The inclusion criteria were: adult patients (age equal to or greater than 18 years), hospitalized in the selected units, who suffered a fall in the institution and had the event notified in the electronic notification system.

The sample consisted of 2,296 patient records with falls reported in the clinical, surgical, psychiatric and emergency care units in the years between 2011 and 2015.

Data were collected retrospectively from the institution's management information system (MI) through Excel spreadsheets containing the data from each unit, including the period, number of falls and patients/day. The information regarding the planning of the preventive actions developed in the institution during the studied period were collected from the documents produced by the Multiprofessional Commission for the Prevention of Injuries from Falls (meetings minutes, trainings and explanatory statements).

A descriptive statistical analysis was carried out with the aid of the Statistical Package for the Social Sciences (SPSS), version 18.0. The rate of incidence of falls in the units was calculated according to the formula: number of falls/number of patients-day*1,000. The study was approved by the institution's Research Ethics Committee (Opinion no. 100496/2010), in accordance with Resolution no. 466/2012 of the National Health Council.

RESULTS

There were 2,296 falls in the clinical, surgical, psychiatric and emergency hospitalization units (HU) between January 2011 and December 2015. Table 1 shows the number of falls and the annual incidence rate of the event in the units.

Table 1 – Number of falls events and annual incidence rate in hospitalization and emergency units – Porto Alegre, Rio Grande do Sul, Brazil, 2015.

Year	No. of falls	Patients/Day	Incidence rate of falls
2011	415	257,755	1.61
2012	548	269,428	2.03
2013	496	271,616	1.83
2014	441	272,758	1.62
2015	396	278,699	1.42
Total	**2,296**	**1,350,256**	**1.70**

Source: Elaborated by the authors based on the institution's management information.

The incidence rate of falls in the year 2011 was 1.61 falls/1,000 patients per day, the period in which the care indicator began to consider all types of inpatient falls rather than just falls from the bed and/or stretcher. The events also began to be investigated and characterized by the use of an analysis instrument developed by nurses, containing information such as type, location, shift of the fall, presence of a companion, patient-related triggering factors, environment, and degree of the injury severity.

In 2012, the rate was 2.03 falls/1,000 patients per day when the Multiprofessional Commission for the Prevention of Injuries from Falls was created, elaborating and instituting a prevention protocol. Evaluation of the risk of falls by the Morse Fall Scale and signaling the risks to the patients through the use of bracelets were both implemented. The nursing teams were trained and an awareness-raising program for patients and family members was implemented through the elaboration of guidelines for fall prevention.

In 2013 the institution invested in fall prevention equipment and apparatuses including electric beds, security bars in the bathrooms, doorbells in the rooms of the psychiatric inpatient unit and handrails along the corridors. The Morse Fall Scale was adapted for use in psychiatric patients with the inclusion of drug-related criteria. Nursing teams received training on preventive measures.

The fall incidence rate dropped from 1.83 in 2013 to 1.62 in 2014, remaining within the institutional goal (≤2 falls/1,000 patients-day). The lowest index was observed in 2015 (1.42 falls/1,000 patients-day).

In 2014, a campaign related to the WHO's six goal was carried out, involving educational actions on the prevention of falls in the units, and the production and distribution of folders and posters. The plans, standard operating procedures and protocols related to falls prevention were updated, and nursing teams were trained.

The notification of falls was reinforced in 2015 with the development of a link in the patient's medical record that facilitates notification of the event. Health professionals were trained and sensitized to this issue.

Figure 1 shows the semiannual follow-up of the incidence rate of falls among hospitalization and emergency units throughout the study period.
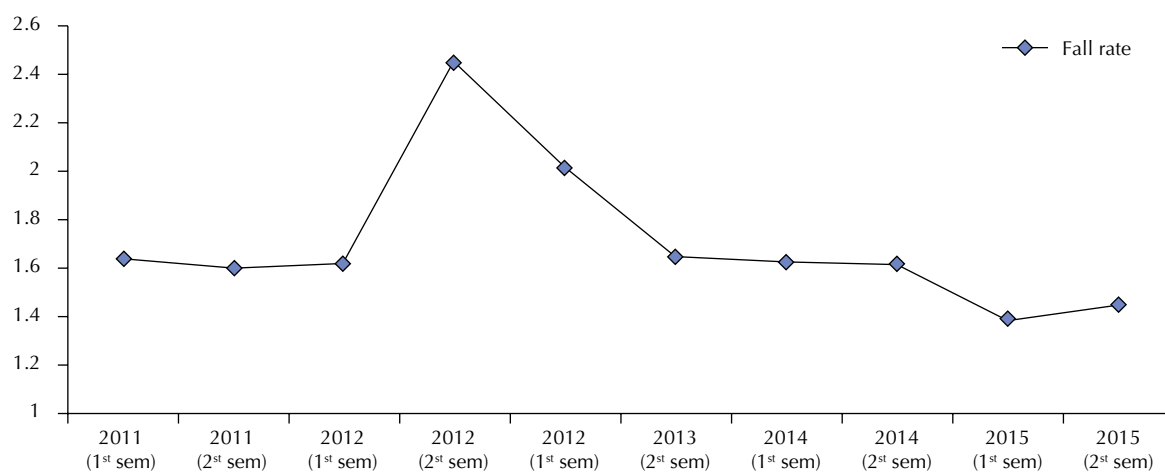
Source: Elaborated by the authors based on the institution's management information.

Figure 1 – Semi-annual incidence rate of falls among the hospitalization and emergency units – Porto Alegre, Rio Grande do Sul, Brazil, 2015.

According to the semi-annual data, we found that the highest rate of falls occurred in the second half of 2012 with 2.44 falls/1,000 patients-day, exceeding the goal of the institution of ≤ 2 falls/1,000 patients-day. In 2013, the incidence of falls began to reduce, reaching 2 falls/1,000 patients-day in the first semester and 1.64 falls/1,000 patients-day in the second half, remaining at this level until the end of 2014, with a further drop in 2015.

There were 861 cases in the period from 2011 to 2015 in the clinical units, and 593 events in the surgical units, with an average incidence rate of 2.37 and 1.79 falls/1,000 patients-day, respectively. In 2012, the highest rate of falls for both units was found, 2.99 for the clinical HUs, and 2.17 for the surgical HUs; while in 2015 the lowest rates were found, 1.81 for the clinical HUs and 1.61 for the surgical HUs.
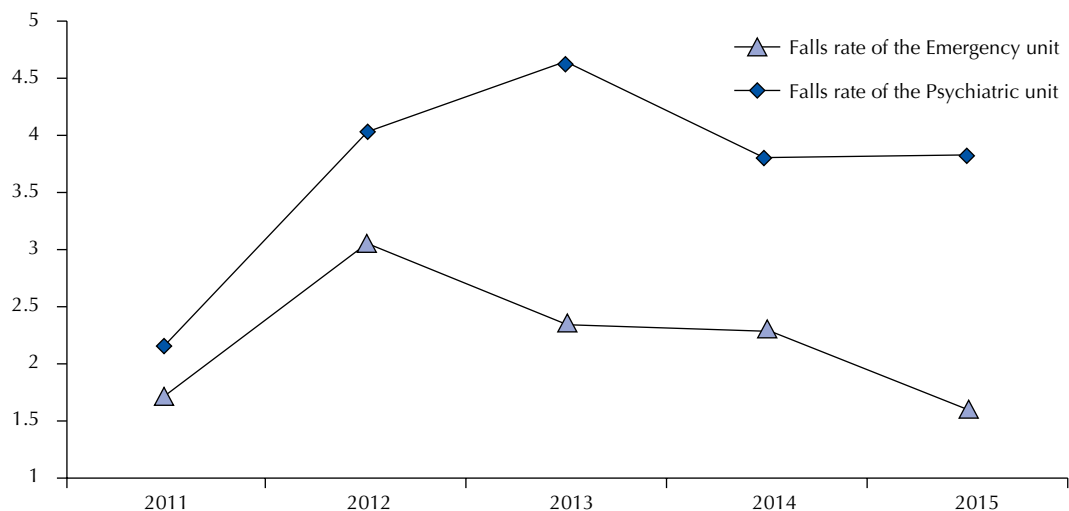
Figure 2 shows the annual incidence rate of falls for the clinical and surgical hospitalization units of the institution under study.

The mean incidence rate in the psychiatric hospitalization unit was 3.69 falls/1,000 patients per day. In the emergency unit, the highest rate of falls occurred in 2012 with 3.07 falls/1,000 patients per day, and the lowest in 2015 with 1.62 falls/1,000 patients per day, thus following the same trend of the other hospitalization units. Figure 3 shows the annual incidence rate of falls in the psychiatric hospitalization unit and in the emergency unit.
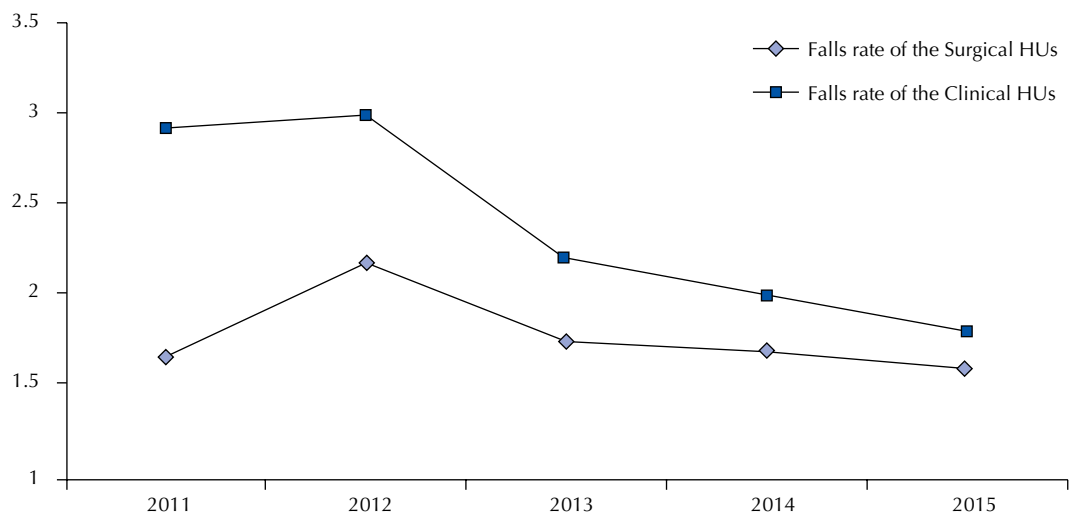
Source: Elaborated by the authors based on the institution's management information.

Figure 2 – Annual incidence rate of falls in clinical and surgical hospitalization units – Porto Alegre, Rio Grande do Sul, Brazil, 2015.

Source: Elaborated by the authors based on the institution's management information.

Figure 3 – Annual incidence rate of falls in the psychiatric and emergency hospitalization units – Porto Alegre, Rio Grande do Sul, Brazil, 2015.

DISCUSSION

In the hospital setting, the incidence of falls is considered an indicator of the care quality, with positive repercussions on the management of nursing services. Nursing quality indicators help in understanding patient-related phenomena, making it possible to assess and analyze them in order to evaluate and modify care processes, thereby aiming for improvements[12].

The incidence of falls of the institution in the studied period (2011 to 2015) had an average of 1.70 falls/1,000 patients per day, which corroborates the data of the national literature.

In an internationally accredited private hospital in São Paulo, the mean incidence of falls over a 4-year period was 1.37 falls/1,000 patients per day[3]. In another institution specialized in cardiology, the incidence of the event in hospitalization units was 2.04 falls/1,000 patients per day[13].

In southern Brazil, the incidence of falls in clinical and surgical units of a private hospital was 1.7 falls/1,000 patients per day[10].

In the US, the incidence of this event in hospitals ranges from three to five falls/1,000 patients per day[14]. In Australia, a study evaluating fall prevention practices in nine hospitals identified an incidence of 3.17 falls/1,000 patients per day[4].

It should be emphasized that the incidence of falls observed in the studies varies according to the characteristics of the institution and of the unit (physical structure, work processes), the definition of falls adopted, the patients' profile, the collection method and the type of data analysis used[3].

The incidence of falls in the institution under study was 1.6 falls/1,000 patients per day in 2011. Actions related to fall events began to be implemented starting from that year. All types of falls started to be considered and investigated through an instrument. Thus, the scenario of falls in the institution begins to be better understood.

Monitoring fall occurrences is an important strategy to support preventive measures, allowing for guiding management and care actions focusing on reducing the rates of the event. Hospital institutions should stimulate the development of work processes that allow and encourage identification, notification and analysis of this safety incident[3,8].

Understanding the circumstances in which falls occur is essential for a better understanding of how and why these events happen in the hospital setting. Therefore, in addition to notification of the event which will permit establishing the incidence rate of falls, it is important to use a data collection instrument to obtain information that characterizes the fall, and that can subsequently be used to analyze them[10].

The instruments to characterize the falls of hospitalized patients are constructed according to the reality of each institution; however, basic data related to the event such as date, time, type, location, environmental conditions, patient information, risk factors, presence of a companion, severity of the injury and the implemented conducts are important items to be considered[10,15].

The use of these instruments also assists the nursing teams in feedback about the overall view of falls in the institution and with the training regarding preventive measures.

In analyzing the incidence of falls, it was verified that the highest index occurred in the second half of 2012 with 2.44 falls/1,000 patients per day. That year was marked by the implementation of the fall prevention protocol, and a series of measures were established seeking to reduce the occurrence of falls and prevent injuries (risk assessment and signaling, patient and family education and training with nursing teams).

Protocols are fundamental instruments for ensuring care quality and safety, enabling systematization of diversified actions based on a scientific background. When directed at the prevention of falls, these instruments require an establishment of measures directed at both the individual and the environment and work processes, since falls are a multifactorial event[3,10].

Measures to prevent falls included in the institutional protocol are based on the recommendations of the PNSP[8], on the *Nursing Intervention Classification* (NIC)[16] and on the literature.

The PNSP was created in 2013 by the Ministry of Health and ANVISA (*Agência Nacional de Vigilância Sanitária*), and instituted the "Fall Prevention Protocol" which defines the actions that institutions should adopt to prevent falls. The purpose of this protocol is to reduce the occurrence of the event in hospitalized patients and the resulting harm. It is essentially based on the implementation of measures that cover risk assessment, multiprofessional care, a safe environment and the promotion of patient, family and professional education[8].

Similarly, studies have shown that multifactorial interventions play an important role in reducing falls in the hospital environment. The components of these interventions include patient risk assessment and signaling, medication management, supervision of the patient and environmental conditions, as well as educational measures aimed at the patient, the family and the health team[6,17-18].

Assessing the risk of falls and its signaling represents the beginning of preventive interventions. There are several scales capable of predicting the risk of falling, however, the best known and most widely used in Brazil is the Morse Fall Scale, which assesses risk factors intrinsic to the patient and classifies them as "high", "medium" or "low" risk for falls[19].

Up until 2012, no instrument for assessing the risk of patients falling and no signaling system were used in the study institution.

These interventions provided a milestone for safety issues related to fall prevention. All patients had a risk of falls assessed during the first 24 hours of hospitalization through the Morse Fall Scale, and in the presence of high risk for falls they received a signaling bracelet and preventive measures, according to institutional protocol.

Thus, 2012 was a year of important mobilizations regarding falls prevention in the institution when the institution was also preparing for international hospital accreditation, which was obtained in 2013.

Given this, it is inferred that the increase in the incidence of the event verified from 2011 to 2012 was the resulting awareness and consequent adherence by nurses to the notification of falls in the institution, and not necessarily a real increase in the number of events.

In 2013, 2014 and 2015 there was a reduction in the incidence of falls, with rates of 1.83, 1.62 and 1.42 falls/1,000 patients-day, respectively, thereby reaching the institutional goal.

The incidence of falls in clinical and surgical hospitalization units followed the institution's general average, with rates increasing in 2012 and a reduction in subsequent years. During the whole study period, it is observed that the incidence of falls in the clinical units remained higher than in the surgical units, similar to other studies[3-4,15]. Patients hospitalized in clinical units generally present longer hospitalization, a greater number of comorbidities and older age, which contributes to an increased risk of falls[20].

The unit with the highest incidence of falls was psychiatry, with rates ranging from 2.17 to 4.65 falls/1,000 patients per day, remaining above the institutional goal for the entire follow-up period.

It is worth pointing out that the majority of studies on falls in the hospital environment are aimed at clinical and surgical units, and those carried out in psychiatry units are scarce, reinforcing the need for further investigations with this type of patient since the rates of falls in these units are high[21].

The incidence of falls in psychiatric units is between 4.1 and 6.4 falls/1,000 patients per day, and the highest rates are found in psychiatric geriatrics, with 9.0 to 17.1 falls/1,000 patients-day[22-23].

The major risk factors for falls in psychiatric patients include confusion or compromised mental status, effects of psychotropic medication, difficulties in balance and gait, and patient behavior (impulsive or impaired actions). These patients may still exhibit decreased awareness of objects within the environment, which also increases the susceptibility to falls[22,24].

Measures aimed at improving the safety of the physical environment were carried out in 2013, giving continuity to institutional preventive actions.

The safety of the environment must be guaranteed to all patients, regardless of the risk since the hospital represents an unknown and unfamiliar environment, and is more critical for the elderly, people with mental changes, and problems with mobility and vision[8,10,20].

In 2014, the fall prevention protocol was revised and updated, and by 2015 the focus was on falls reporting. Training with nursing teams on fall prevention measures was carried out annually.

The education of health professionals and patients is an important strategy to be used in preventing falls, in addition to also being recommended by safety programs on a global scale.

Measures aimed at patient education must be carried out from the moment of identification and signaling of the risk with reinforcements of preventive guidance given by professionals who will accompany them throughout their whole hospitalization. Patient participation in actions related to their safety should be encouraged, as should their understanding of their vulnerability to falls.

It is important to highlight the role of professional nurses in fall prevention programs, since they are the ones who carry out the risk assessment of the patients, plan and implement the preventive interventions and who evaluate their results.

Furthermore, nurses are responsible for coordinating the nursing team, and they are the ones who spend the most time on patient care. Therefore, nursing care is recognized as a fundamental factor in the prevention of falls[25].

Therefore, it is believed that the implementation of a fall prevention protocol with use of a scale of risk assessment, signaling, systematic awareness and guidance to patients, family members and nursing staff performed since 2012 may have impacted the decrease in the occurrence of the fall event in the institution under study.

In carrying out this research, we can point out the retrospective analysis and the data collection in a single institution as limitations, as well as the non-inclusion of all hospital units such as the intensive care unit, surgical unit and obstetrical center, as these are units with very different processes and profile of patients from the other selected units. Despite these points, the study allowed for describing the history of the incidence of falls and preventive actions carried out at the institution, suggesting a positive impact of these interventions in reducing the event's occurrence.

CONCLUSION

The results of this study allowed us to identify and analyze the incidence of falls in a hospital setting, as well as its relations to the actions implemented during the course of 5 years, showing the importance of preventive interventions in reducing the occurrence of falls.

In the current panorama of health quality and safety, present results from preventive actions for one of the main safety incidents such as falls is fundamental to nursing and health care practice, and can help hospital institutions in developing interventions, goals and in managing the incidents.

RESUMO

Objetivo: Descrever a incidência das quedas e a sua relação com as ações preventivas desenvolvidas em um hospital universitário brasileiro. **Método:** Estudo longitudinal retrospectivo. Foram incluídos pacientes adultos, internados em unidades clínicas, cirúrgicas, psiquiátrica e de emergência, que sofreram queda na instituição, e tiveram o evento notificado no período de janeiro de 2011 a dezembro de 2015. Os dados foram coletados no sistema de informação gerenciais da instituição e analisados no programa estatístico SPSS. **Resultados:** Ocorreram 2.296 quedas, com uma média de incidência de 1,70 quedas/1.000 pacientes-dia. Houve aumento na incidência de quedas no período de 2011 (1,61) a 2012 (2,03). Nos anos seguintes, a incidência de quedas apresentou redução de 1,83 quedas/1.000 pacientes-dia em 2013 para 1,42 quedas/1.000 pacientes-dia em 2015. A incidência de quedas acompanhou a implementação de ações preventivas, sugerindo impacto destas intervenções na redução da ocorrência do evento. **Conclusão:** Os achados demonstram a importância da implementação de intervenções preventivas na redução da incidência de quedas em pacientes hospitalizados.

DESCRITORES

Acidentes por Quedas; Pacientes Internados; Cuidados de Enfermagem; Prevenção de Acidentes; Segurança do Paciente.

RESUMEN

Objetivo: Describir la incidencia de las caídas y su relación con las acciones preventivas desarrolladas en un hospital universitario brasileño. **Método:** Estudio longitudinal retrospectivo. Fueron incluidos pacientes adultos, ingresados en unidades clínicas, quirúrgicas, psiquiátricas y de emergencia, que sufrieron caída en el centro y tuvieron el evento notificado en el período de enero de 2011 a diciembre de 2015. Los datos fueron recolectados en el sistema de información de gestión del centro y analizados en el programa estadístico SPSS. **Resultados:** Ocurrieron 2.296 caídas, con un promedio de incidencia de 1,70 caídas/1.000 pacientes-día. Hubo incremento en la incidencia de caídas en el período de 2011 (1,61) a 2012 (2,03). En los años siguientes, la incidencia de caídas presentó reducción de 1,83 caídas/1.000 pacientes-día en 2013 para 1,42 caídas/1.000 pacientes-día en 2015. La incidencia de caídas acompañó la implantación de acciones preventivas, sugiriendo el impacto de dichas intervenciones en la reducción de la ocurrencia del evento. **Conclusión:** Los hallazgos demuestran la importancia de la implantación de intervenciones preventivas en la reducción de la incidencia de caídas en pacientes hospitalizados.

DESCRIPTORES

Acidentes por Caídas; Pacientes Internos; Atención de Enfermería; Prevención de Accidentes; Seguridad del Paciente.

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