







## ANALYSIS OF THE OCCURRENCES OF FALLS ASSOCIATED WITH INJURY IN A PSYCHIATRIC INPATIENT UNIT

### ANÁLISE DAS OCORRÊNCIAS DE QUEDAS ASSOCIADAS AO DANO EM UNIDADE DE INTERNAÇÃO PSQUIÁTRICA

### ANÁLISIS DE LAS OCURRENCIAS DE CAÍDAS ASOCIADAS A DAÑOS EN LA UNIDAD DE HOSPITALIDAD PSQUIÁTRICA

 Talita Portela Cassola<sup>1</sup>  
 João Nunes Maidana Júnior<sup>1</sup>  
 Leandro Barbosa de Pinho<sup>2</sup>  
 Michele Schmid<sup>2</sup>  
 Lylam Midori Suzuki<sup>3</sup>  
 Isis Marques Severo<sup>3</sup>

<sup>1</sup>Universidade Federal do Rio grande do Sul - UFRGS, Escola de Enfermagem. Porto Alegre, RS - Brazil.

<sup>2</sup>Hospital de Clínicas de Porto Alegre - HCPA, Unidade de Internação psiquiátrica Serviço de Enfermagem. Porto Alegre, RS - Brazil.

<sup>3</sup>HCPA - Serviço de Enfermagem. Porto Alegre, RS - Brazil.

Corresponding author: Talita Portela Cassola  
E-mail: talita\_cassola@hotmail.com

#### Authors' Contributions:

Data Collection: Talita P. Cassola, Michele Schmid, Lylam M. Suzuki, Isis M. Severo; Investigation: Lylam M. Suzuki; Validation: Leandro B. Pinho, Michele Schmid; Statistical Analysis: Talita P. Cassola, Isis M. Severo; Writing – Original Paper Preparation: Talita P. Cassola, João N. M. Júnior, Leandro B. Pinho, Isis M. Severo.

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#### ABSTRACT

Objective: to analyze the occurrence of falls associated with injury in patients hospitalized in a psychiatric unit. Method: retrospective ecological study of 92 reports of falls in a psychiatric inpatient unit. Data collection took place using the GEO (Strategic Operational Management) electronic system of the hospital studied and the medical records, with descriptive statistics and non-parametric tests. Results: regarding the degree of injury, 39.1% of the falls were mild and 29.1% were considered moderate to severe, especially in patients with schizophrenia and bipolar disorder. The patient diagnosis variables, type of fall, event shift, place of fall and electroconvulsive therapy did not show any association with the degree of injury presented by patients after the event. Conclusion: with the study, it was possible to identify the particularities that affect the psychiatric patient and predict the most prevalent conditions for the event of falls, in order to serve as a subsidy for the installation of preventive measures during hospitalization.

Keywords: Patient Safety; Accidental Falls; Psychiatric Nursing; Mental Health; Nursing.

#### RESUMO

Objetivo: analisar as ocorrências de quedas associadas ao dano em pacientes internados em uma unidade psiquiátrica. Método: estudo ecológico retrospectivo de 92 notificações de quedas em unidade de internação psiquiátrica. A coleta dos dados ocorreu pelo sistema eletrônico GEO (Gestão Estratégica Operacional) do hospital estudado e do prontuário, sendo realizada estatística descritiva e testes não paramétricos. Resultados: quanto ao grau de dano, 39,1% das quedas foram leves e 29,1% consideradas de moderadas a graves, principalmente em pacientes com esquizofrenia e transtorno bipolar. As variáveis diagnóstico do paciente, tipo de queda, turno do evento, local da queda e eletroconvulsoterapia não mostraram associação com o grau de dano apresentado pelos pacientes após o evento. Conclusão: com o estudo, foi possível identificar as particularidades que afetam o paciente psiquiátrico e prever as condições mais prevalentes para o evento quedas, de modo a servir de subsídio para a instalação de medidas preventivas durante a internação.

Palavras-chave: Segurança do Paciente; Acidentes por Quedas; Enfermagem Psiquiátrica; Saúde Mental; Enfermagem.

#### RESUMEN

Objetivo: analizar las ocurrencias de caídas asociadas a lesiones en pacientes hospitalizados en una unidad psiquiátrica. Método: estudio ecológico retrospectivo de 92 notificaciones de caídas en una unidad de hospitalización psiquiátrica. Los datos se recogieron mediante el sistema electrónico GEO (Gestión Estratégica Operativa) del hospital estudiado y las historias clínicas, y se realizaron estadísticas descriptivas y pruebas no paramétricas. Resultados: en cuanto al grado de lesión, el 39,1% de las caídas fueron leves y el 29,1% de moderadas a graves, principalmente en pacientes con esquizofrenia y trastorno bipolar. Las variables diagnóstico del paciente, tipo de caída, turno del evento, lugar de la caída y terapia electroconvulsiva no mostraron asociación con el grado de daño que presentaron los pacientes después del evento. Conclusión: con este estudio, fue posible identificar las particularidades que afectan a los pacientes psiquiátricos y predecir las condiciones más prevalentes para el evento de caídas, con el fin de servir de subsidio para la instalación de medidas preventivas durante la hospitalización.

Palabras clave: Seguridad del Paciente; Accidentes por Caídas; Enfermería Psiquiátrica; Salud Mental; Enfermería.

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## INTRODUCTION

Falls are events that take the person towards the ground or to another lower level, discarding intentional position changes to lean on furniture and other objects.<sup>1</sup> As it is an event with unintentional characteristics, they occur largely in populations most vulnerable, especially children, the elderly and psychiatric patients.<sup>2</sup>

Among the main safety incidents in the hospital environment, falls stand out, being responsible for two out of five events related to patient care.<sup>3</sup> Public and private institutions have increased their concern regarding certain groups of patients who would be more prone to fall, like the psychiatric ones, due to the high rate of comorbidities and the recurrent use of psychotropic medications.<sup>4</sup>

There is a consensus in the scientific literature on the scarcity of research on falls in psychiatric patients.<sup>4</sup> A study developed in Australia evaluated fall prevention practices in nine hospitals, identifying an incidence of 3.17 falls/1,000 patient-days.<sup>5</sup> The highest rates of falls diseases were in psychiatric geriatric patients, with rates of 3.19 falls/1,000 patient-day, followed by patients in dependency units and intensive psychiatric care, with 1.95 falls/1,000 patient-day, and in psychiatric emergencies, reaching 1.44 falls/1,000 patient-day.<sup>5</sup>

A study from Germany, on the other hand, showed fall rates in geriatric psychiatry that ranged from 3.2 to 17.1 falls/1,000-day.<sup>6</sup> In our country, in a psychiatric inpatient unit of a public hospital, the average incidence of falls in the four-year period was 3.69 falls/1,000 patient-days.<sup>7</sup>

The injury generated by falls can worsen the clinical condition of patients, cause limitations, increase hospitalization time and hospital costs, in addition to encompassing ethical and legal issues for the institution. The consequences of these events go beyond the physical, but also psychological and social order, such as fear of falling again, loss of confidence in the ability to walk safely, depression and increased rates of (re)hospitalization.<sup>3,7</sup>

To measure the contribution of risk factors in psychiatric inpatient units, Scanlan, Wheatley and McIntosh<sup>5</sup> point to intrinsic, behavioral and extrinsic (environmental) factors. Intrinsic factors present about 47.6%. Balance/mobility difficulties compromise around 18.2%, followed by dizziness, medication effects, medication condition, substance intoxication and urgency to use the bathroom. Physical/behavioral factors represent 12.9%, among which the patient's behavior associated with the disease represents about 9.5%, followed by the use of

shoes, activities performed in a hurry and without the use of accessories to aid mobility. In the last group, the environment factor stands out, which corresponds to 13.6%. The wet floor has the highest prevalence, 6.1%, followed by other slips, equipment, stumbles and dark environments.<sup>5</sup>

For Blair and Gruman,<sup>8</sup> in view of the context of psychiatric units, the combination of risk factors, such as diagnosis, change in behavior and the use of medications, becomes more risky for the patient than the risk factors in a way isolated. Due to vulnerability from a pathological point of view, such as episodes of disorganization, delusions/hallucinations and agitation, some factors are associated, such as the use of psychotropic medications<sup>6,9</sup> and certain invasive procedures, such as electroconvulsive therapy (ECT), which alters the behavioral and cognitive.<sup>10</sup>

The fall event is one of the main safety incidents in hospital institutions, as it can generate iatrogenic events capable of producing temporary or permanent injury to patients,<sup>3</sup> especially those who are more fragile, due to a health-disease condition, such as patients hospitalized in psychiatric units.<sup>9</sup> In this context, understanding the circumstances in which falls occur is essential for a better understanding of how and why these events happen in the hospital environment. This may be due to the notification of the event, which will allow establishing the indicator of the incidence of falls,<sup>7</sup> as well as allowing the use of an instrument to assess the risk of falls sensitive to the specificity of each patient.

In the hospital institution of this study, the fall risk assessment process used for the psychiatric unit, until May 2019, was the Morse Scale and the medication criterion,<sup>11</sup> due to the use of polypharmaceuticals and procedures such as ECT. As a strategy to overcome the gaps in the Morse Scale, a model for predicting the risk of falls in hospitalized adult patients was developed and validated in Brazil, called the Severo, Almeida and Kuchenbecker Falls Scale (SAK). In June 2019, the SAK was implemented in the psychiatric unit under study.<sup>12</sup> To monitor the quality indicator fall incidence rate, the institution works with a goal of  $\leq 2.0$  falls/1,000 patient-days, and in psychiatric inpatient unit, the goal is  $\leq 3.0$  falls/1,000 patient-days.<sup>13</sup>

Given the above, we have the following research question: what are the particularities of the event falls associated with injury in patients hospitalized in the psychiatric unit? As an objective, we seek to analyze the event falls associated with injury in patients hospitalized in a psychiatric unit.

## METHOD

The description of this study was based on the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline in all its stages.<sup>14</sup>

### Study Design

This is a retrospective ecological study. In ecological studies, the occurrence of the disease/health-related condition and the exposure of interest among groups of individuals (populations of countries, regions or municipalities, for example) are compared in order to investigate the possible existence of a relationship between them. Therefore, aggregate measures of exposure and disease are compared.

### Study Context

The study was carried out in a large university general hospital in southern Brazil, in a psychiatric inpatient unit. The institution is accredited by the Joint Commission International.<sup>15</sup>

This hospital has 920 beds, serves patients from the public health network, medical insurance plans and private hospitalizations. It is a reference in the region, working mainly in the dimensions of high complexity care, teaching and research in health.

The psychiatric inpatient unit receives patients with severe and acute mental disorders. It has 36 beds, 26 of which are intended for the Unified Health System (SUS) and 10 beds for patients from other health plans or private individuals.

### Participants

Study participants are adults hospitalized in the institution's psychiatric inpatient unit from January 2018 to May 2019. The selected period is justified because it precedes the process of replacing the Morse Scale<sup>16</sup> for the SAK Falls Scale.<sup>12,13</sup>

The non-probabilistic sample consisted of 92 records of occurrences of falls with 67 patients involved, notified by the unit's nurse.

### Data Source

Data collection took place from June to November 2019, based on the compilation of data from a specific management system of the hospital institution (GEO

– Gestão Estratégica Operacional) and the electronic medical record.

### Variables and Study Outcome

The study variables were: length of hospital stay until the event (number of days); age; presence of records of fall(s) in Nursing evolutions; reassessment of the event within 24 hours; presence of wristbands to signal the risk of falls in patients; medical diagnostic; type and location of the fall; event shift; degree of injury related to the fall(s); behavioral risk factors (disorganization, agitation, hallucination), intrinsic factors (balance alteration, muscle weakness, altered mobility, hypotension, dizziness, urinary incontinence, fecal incontinence, convulsion and vomiting) and extrinsic factors (drug change, ECT, inappropriate use accessories, damp or wet floor, excess furniture, absence of bed rails, use of probe); in addition to the Nursing Diagnosis Risk of Falls and its risk factors registered in the Hospital Use Management Application (AGHUse) of the institution.

The Nursing diagnosis and its risk factors were listed by the unit's nurse based on the patient's assessment. The institution is based on the taxonomy of Nanda-International for Nursing diagnoses.<sup>17</sup>

The degrees of injury were classified as: no injury; mild injury—mild symptoms, loss of function, or minimal or moderate injury of rapid duration and need for only minimal interventions (e.g. extra observation, investigation, treatment review, light treatment); moderate injury — symptomatic patient in need of intervention (e.g. additional therapeutic procedure, additional treatment), increased length of stay, and permanent or long-term injury or loss of function; and severe injury—symptomatic patient, requiring life support intervention or major clinical/surgical intervention, causing decreased life expectancy, with major injury or permanent or long-term loss of function, or associated death.<sup>18</sup>

### Biases

Data underwent independent double-entry, and discordant data were checked and corrected. The analysis was performed using Excel (Microsoft) and SPSS (Statistical Package for Social Sciences) version 20.0.

### Statistical Methods

A database in Microsoft Excel version 15.0 was developed by the researchers, containing the

variables investigated. Descriptive statistical analysis and non-parametric tests were performed using the Statistical Package for the Social Sciences (SPSS), version 18.0. Associations were made between the variables (patient diagnosis, type of fall, event time, place of fall and use of ECT) with the degree of injury presented by patients after the occurrence of the injury, using Pearson's chi-square and Fisher's exact statistical tests.

### Ethical Aspects

The research was approved by the Research Ethics Committee of the Federal University of Rio Grande do Sul (UFRGS), under Opinion No. 7382719.7.0000.5347.

## RESULTS

From January 2018 to May 2019, there were 92 falls with 67 patients involved, of which 53.3% (n=49) were men, with a mean age of 53.78 years (SD± 15.94). Table 1 shows the distribution of patients who suffered falls, according to age group:

Table 1 - Distribution of patients who suffered falls, according to age group (n=92). Porto Alegre, RS, Brazil, 2019

AGE	N	%
18  <30 years	19	20.7
30  <40 years	7	7.6
40  <50 years	11	12.0
50  <60 years	17	18.5
60  <70 years	30	32.6
70  >80 years	17	18.5

Figure 1 shows the length of stay until the event:

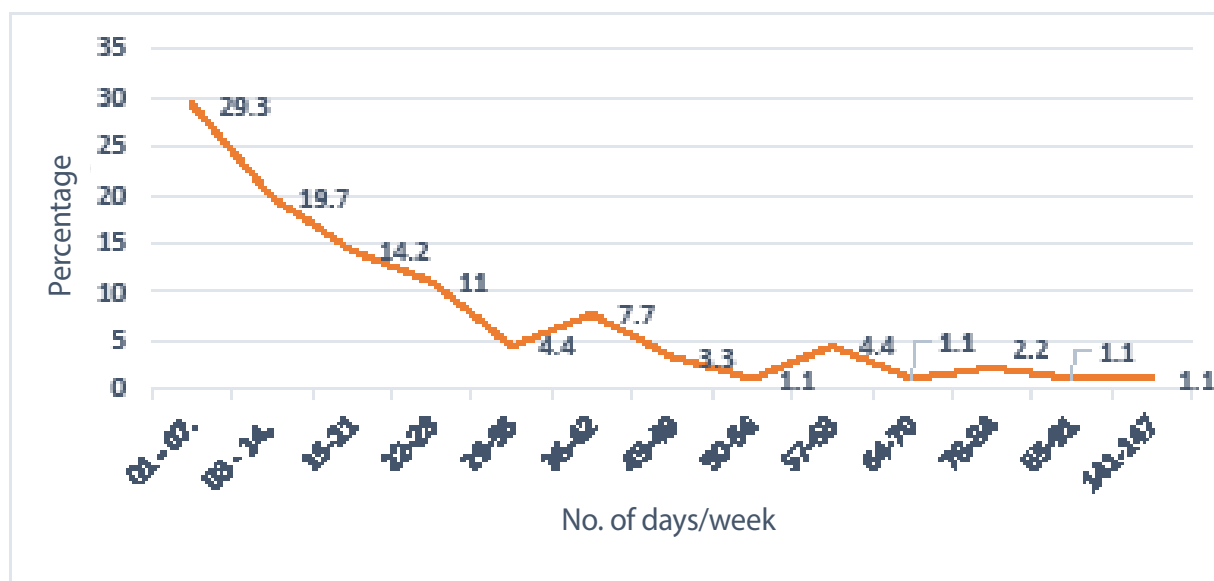


Figure 1 - Occurrence of falls according to the length of stay until the event in a psychiatric unit, n=92, Porto Alegre, RS, Brazil, 2019

The degree of injury resulting from falls during psychiatric hospitalization showed the following presentation: no injury 34.8% (n=32), mild injury 39.1% (n=36) and moderate to severe injury 26.1% (n=24), and during the study period, no patient died as a result of the disease. The variables that define the characteristics of falls were associated with injury, as shown in Table 2.

Behavioral, intrinsic and extrinsic risk factors are presented in Table 3.

For the analysis of the Nursing work process, it is directed to the evaluation, reassessment in the event of a fall, identification of the Nursing diagnosis Risk for Falls and signaling in the patient with the use of the yellow wristband in the psychiatric unit, as shown in Table 4.

## DISCUSSION

No cenário hospitalar, a incidência de quedas é considerada um indicador de qualidade assistencial, com

Table 2 - Characteristics of falls associated with injury in psychiatric hospitalization, n=92. Porto Alegre, RS, Brazil, 2019

Characteristics of falls/degree of damage	No injury n=32 (%)	Mild n=36 (%)	Moderate/ Severe n=24 (%)	Total n=92 (%)	p-valor
Medical Diagnostic					0.403**
Schizophrenia	13 (40.6)	15 (41.6)	9 (37.5)	37 (40.2)	
Bipolar Disorder	4 (12.5)	8 (22.2)	6 (25)	18 (19.5)	
Attempted Suicide/Psychosis/Dysthymia	7 (21.8)	6 (16.6)	3 (12.5)	16 (17.4)	
Depressive Disorder	3 (9.37)	4 (11.1)	6 (25)	13 (14.1)	
Delirium/Mental Retardation/Dementia	5 (15.6)	3 (8.3)	-	8 (8.6)	
Shift					0.834*
Morning	12 (37.5)	13 (36.1)	12 (50)	37 (40.2)	
Afternoon	7 (21.8)	9 (25)	5 (20.8)	21 (22.8)	
Night	13 (40.6)	14 (38.8)	7 (29.16)	34 (37.0)	
Location					0.506*
Bed	14 (43.7)	23 (63.8)	11 (45.8)	48 (52.1)	
Bathroom	7 (21.8)	5 (13.8)	3 (12.5)	15 (16.3)	
Dining/Corridor/Recreation site	11 (34.3)	8 (22.2)	10 (41.6)	29 (31.5)	
Type of Fall					0.386*
Own Height	14 (43.7)	19 (52.7)	12 (50)	45 (48.9)	
Chair/Bed	9 (28.1)	11 (30.5)	10 (41.6)	30 (32.6)	
Slip/Trip	9 (28.1)	6 (16.6)	2 (8.3)	17 (18.5)	

\*Pearson's Chi-Square Test. \*\* Fischer's Exact.

Table 3 - Occurrence of falls according to the risk factors of psychiatric patients, n=92. Porto Alegre, RS, Brazil, 2019

Risk Factors	N	%
Behavioral Factors		
Desorganization	46	50.0
Agitation	23	25.0
Hallucination	10	10.9
Intrinsic Factors		
Change in balance	55	59.8
Muscle weakness	50	54.3
Changed mobility	30	32.6
Hypotension	21	22.8
Dizziness	11	12
Urinary incontinence	5	5.4
Fecal incontinence	5	5.4
Convulsion	4	4.3
Vomiting	1	1.1
Extrinsic Factors		
Drug alteration	75	81.5
ECT	37	40.2
Improper use of accessories	21	22.8
Moist or wet floor	17	18.5
Furniture	15	16.3
No grids	8	8.7
Use of probe	5	5.4

repercussões positivas na gestão dos serviços de Enfermagem. Os indicadores de Enfermagem auxiliam na compreensão de fenômenos relacionados aos pacientes,

Table 4 - The risk factors linked to the Nursing diagnosis Risk of Falls, record in progress of the event, 24-hour reassessment and use of the wristband in psychiatric patients, n=92. Porto Alegre, RS, Brazil, 2019

Diagnosis Risk of Falls, its risk factors, evolution of the event, reassessment and use of wristband	n	%
Diagnosis Risk of Falls	70	76.0
Risk factor		
Drug effect	36	39.1
Impaired mobility	12	13
Neurological alteration	10	10.9
Age extreme	6	6.5
Physiological alteration	5	5.4
Environmental Condition	1	1.1
Evolution of the event		
Yes	72	78.3
No	20	21.7
24-hour reassessment		
Yes	56	60.9
No	36	39.1
Wristband		
No	83	90.2
Yes	9	9.8

possibilitando aferi-los e analisá-los, de modo a avaliar os processos assistenciais e melhorá-los.<sup>19</sup>

In the hospital setting, the incidence of falls is considered an indicator of quality of care, with positive repercussions on the management of Nursing services. Nursing

indicators help to understand phenomena related to patients, making it possible to measure and analyze them, in order to evaluate care processes and improve them.<sup>19</sup>

In the psychiatric inpatient unit, the fall indicator can show gaps in the risk assessment process and risk factors in the Nursing work process, such as the signaling of the use of wristbands in patients at risk. It was found that: in 90.2% (n=83) of the occurrences, the patients were not wearing the bracelet; 21.7% (n=20) of the events were not registered in Nursing evolutions; and 39.1% (n=36) were not reassessed. Such results reinforce the need for strengthening actions in protocols for the safety of evidence-based care. These instruments, when aimed at preventing falls, require the establishment of targeted measures, both for the individual and for the environment and work processes, since the fall is a multifactorial event.<sup>17,12</sup>

In this sense, it is understood that the assessment and signaling of the risk of falls represent the beginning of preventive interventions for patient,<sup>7</sup> shown in Table 4.

It is necessary to recognize factors such as age, in line with the literature<sup>2</sup>, which points to greater research investment on the subject of falls in elderly patients. Research data showed a 51.1% prevalence of the outcome in patients aged 60 years and older. However, it is noteworthy that not only the psychogeriatric population was considered as a faller, being a warning sign for the care of adults<sup>4</sup> with mental disorders, making it necessary to rethink the Nursing process in all its stages, in connection with the multiprofessional team.

Multiple causes of the higher incidence of falls in elderly patients are recognized, such as difficulty in walking, use of medications, diverse diagnoses and comorbidities, and failure to request assistance from the Nursing team when necessary. In addition, there are flaws in the physical structure of the environment, such as the lack of support bars and the non-use of guardrails in the bed.<sup>17</sup>

As for behavioral factors, it refers to the agitation and/or cognitive state of psychiatry/mental health patients. An Australian study that compared a group of psychiatric patients with neurocognitive disorders showed differences in risk factors for falls. For patients with neurocognitive disorders, mental confusion, dementia-associated disorganization and mild injury were prevalent. Psychiatric patients, on the other hand, were associated with postural hypotension, urinary and fecal incontinence and drug effects, demonstrating severe injury, with demands for invasive medical procedures and increased length of stay.<sup>9</sup>

In this sense, the extrinsic factors of medication corresponding to 81.5% of the injuries (Table 3), evidenced by the Nursing diagnosis Risk of Falls related to the

adverse effect of medication, represented 39.1% of the occurrences (Table 4), demonstrating the need for an assessment that predicts the risk of falling and classification of the factor associated with the Nursing diagnosis for care to be preventive and effective.

In the psychiatric inpatient unit, the use of psychotropic drugs that alter cognitive functions, balance and gait is a reality, directly interfering with the risk of falling. Another factor is the use of inappropriate accessories for mobility 22.8% and slippery floor 18.5% (Table 3).

A survey pointed out six variables associated with increased risk of falling, namely: female sex, ECT, mood stabilizers, cardiac arrhythmias, Parkinson's disease and neurological and dementia disorders. In addition, it associated falls and ECT with longer hospital stays in psychiatric patients.<sup>6</sup>

The association of injury with the characteristics of falls is scarce in the scientific literature. In this sense, in psychiatry, it was observed that 34.8% of the injuries were without injury, 39.1% had mild injury and few resulted in serious injuries. Falls with slight injury occurred from standing height in 52.7% of the cases, mainly during the night shift (38.8%) — probably when transferring from the bedroom to the bathroom, justified by the constant coming and going due to the use of medications such as laxatives and diuretics. Drug change was the most prevalent extrinsic risk factor in this study, present in 81.5% of the diseases, meeting the reality of psychiatric patients, users of multiple medications simultaneously.

In a research carried out in a private and philanthropic institution in the south of Brazil, the falls with injury represented 43% of the total number of events, being mostly mild 80%, followed by severe 11.9% and moderate 7.3%.<sup>7</sup>

In our study, falls with injury were not associated with the variables explained in Table 2. However, the data portray the particularities of the psychiatric patient, allowing us to look at psychiatric diagnoses, highlighting falls with light injury (n=36) in patients with schizophrenia (41.6%) and bipolar disorder (22.2%) (Table 2). Such data are in line with an investigation<sup>19</sup> that showed similarity between the prevalence of falls in psychiatry, indicating 60% in patients with schizophrenia and 17.8% in patients diagnosed with bipolar mood disorder.

In this sense, the risk of patient falls in hospitals cannot be completely eliminated, considering the complexity involved in the event and the intrinsic, extrinsic and behavioral factors of the patient. Actions must be carried out in order to, at least, reduce their consequences, that is, the occurrence of injury.<sup>20</sup>



Falls do not occur uniformly in the hospital environment and depend on the patient's profile, the characteristics of the unit, the care processes and practices adopted in specific areas such as neurology/psychiatry and rehabilitation.<sup>7</sup>

## CONCLUSION

The accomplishment of this study allowed to analyze the particularities of the event falls associated with injuries in psychiatric patients. The prevalence of events with mild injuries was identified, mainly in patients with diagnoses of schizophrenia and bipolar mood disorder, most of whom occurred at their own height and inside the room, mainly during the night shift.

The data allowed highlighting issues of vulnerability of the psychiatric patient, whether young adult and/or elderly, breaking paradigms of investments in research on falls directed to the elderly population. In addition, it was possible to point out gaps in work processes, such as the fall risk assessment process, the demand for Nursing records and the 24-hour fall reassessment process, to the point of being a possibility to guide Nursing care /multi-disciplinary team in relation to the complexity of factors associated with the event.

As limitations of this study, it is initially pointed out the retrospective analysis and the non-inclusion of other mental health and psychiatry services, such as the inpatient unit for alcohol and other drugs. Furthermore, sample size calculation was not performed and it is inferred that, therefore, the analysis of the characteristics of falls associated with injury did not obtain a significant statistical value, which is why they cannot be generalized, requiring further studies. However, they are of great importance for reviewing the internal processes of the participating institution and for understanding the condition in the complex perspective of hospitalization in a psychiatric unit.

From the managerial perspective, a practice has been guided by the results of monitoring events, that is, from the knowledge of the characteristics of falls with injury in psychiatric patients. The risk factors will allow learning in the area of mental health to establish safer care processes, according to the specificity of the patient and what is proposed in the fall prevention protocol.

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