

# RESULTS OF EDUCATIONAL INTERVENTIONS ON PATIENT SAFETY IN ERROR AND ADVERSE EVENT REPORTING

## RESULTADOS DE INTERVENÇÕES EDUCATIVAS SOBRE SEGURANÇA DO PACIENTE NA NOTIFICAÇÃO DE ERROS E EVENTOS ADVERSOS

## RESULTADOS DE INTERVENCIONES EDUCATIVAS SOBRE SEGURIDAD DEL PACIENTE EN LA NOTIFICACIÓN DE ERRORES Y EVENTOS ADVERSOS

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Objective: evaluate the results of educational interventions on patient safety in the reporting of errors and adverse events. Method: quantitative, descriptive case study, developed between July and August 2016, in which the records on reports of adverse events, technical complaints and incidents were analyzed, coming from five adult inpatient units of a university hospital in Southern Brazil, which took place between 7/1/2015 and 6/30/2016. The absolute and relative figures and significance were compared before and after educational interventions. Results: 292 technical complaints were evaluated for the period, divided among before (39), during (139) and after (114) the educational interventions. Statistical significance was compared in the reports related to surveillance errors. Conclusion: the educational interventions on patient safety were responsible for the significant increase in the number of error and adverse event reports, corresponding to a 256% increase.

Descriptors: Patient safety. Nursing. Education, nursing. Medical-surgical nursing. Inservice training. Medical errors.

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*Objetivo: avaliar os resultados de intervenções educativas sobre segurança do paciente na notificação de erros e eventos adversos. Método: estudo quantitativo, descritivo, realizado nos meses de julho a agosto de 2016, no qual analisou-se registros das notificações de eventos adversos, queixas técnicas e incidentes de cinco unidades de internação adulto de um hospital universitário do Sul do Brasil, ocorridos entre 1/7/2015 e 30/6/2016, comparando os números absolutos, relativos e significância, antes e após a realização de intervenções educativas. Resultados: o número de notificações de erros, incidentes e queixas técnicas no período avaliado foi de 292, divididos em antes (39), durante (139) e após (114) as intervenções educativas. A significância estatística foi confirmada nas notificações relacionadas aos erros de vigilância. Conclusão: as intervenções educativas sobre segurança do paciente foram responsáveis pelo significativo aumento do número de notificações de erros e eventos adversos, correspondendo a um aumento de 256%.*

*Descritores: Segurança do paciente. Enfermagem. Educação em enfermagem. Enfermagem médico-cirúrgica. Capacitação em serviço. Erros médicos.*

*Objetivo: evaluar los resultados de intervenciones educativas sobre seguridad del paciente en la notificación de errores y eventos adversos. Método: estudio cuantitativo, descriptivo, desarrollado en los meses de julio a agosto del 2016, en el cual fueron analizados registros de las notificaciones de eventos adversos, quejas técnicas e incidentes de cinco unidades de internación adulta de un hospital universitario del Sur de Brasil, ocurridos desde 1/7/2015 hasta 30/6/2016, comparando los números absolutos, relativos y significancia, antes y después de la realización de intervenciones educativas. Resultados: el número de notificaciones de errores, incidentes y quejas técnicas en el período evaluado fue 292, divididos en antes (39), durante (139) y después (114) de las intervenciones educativas. La significancia estadística fue confirmada en las notificaciones relacionadas a los errores de vigilancia. Conclusión: las intervenciones educativas sobre seguridad del paciente fueron responsables por el aumento significativo del número de notificaciones de errores y eventos adversos, correspondiendo a un aumento de 256%.*

*Descriptorios: Seguridad del paciente. Enfermería. Educación en enfermería. Enfermería médico-quirúrgica. Capacitación en servicio. Errores médicos.*

## Introduction

Globally, there has been a discussion on patient safety and safe care in the face of increasing health care errors, damaging patients, professionals and health systems.

Inservice patient safety requires efforts from the entire health system, involving actions to improve performance, management, environment, equipment and staff, to identify actual and potential risks, in order to find short- and long-term solutions to improve the health system<sup>(1)</sup>. In practice, however, health organizations find it difficult to carry out the actions recommended by the World Health Organization (WHO), because they tend to maintain a traditional culture that blames and punishes the professional for the mistake made.

Health institutions that, when analyzing an incident, choose the individual guilt model, lose the possibility of improving the system and making the occurrence of new errors less likely<sup>(2)</sup>. When punishing a professional, the organization denies its responsibility in the event and does

not correct it properly. A different and positive attitude is the one that discloses the negative event, seeing it as something that deserves to be analyzed at all levels, starting with management, openly accepting the new ideas for change<sup>(2)</sup>.

The organizational perspective of the safety culture has long been adopted in other work sectors, such as aviation, and uses data and errors already made to improve the system, addresses the education and incident prevention aspects and seeks strategies for the enhancement and clarification of safety processes<sup>(3-4)</sup>.

Error reporting in health is an important element for improving patient safety and quality of care. Therefore, it should be an integral part of the organizational culture, considered as progress towards achieving a safety culture<sup>(5-6)</sup>. The information can help to identify hazards and risks and provide information on where the system is failing, thus avoiding harm to future patients<sup>(7)</sup>.

Thus, health professionals who act directly with patients and are subject to making the most diverse and severe errors possible, need to participate in this commitment to patient safety and report errors, incidents, near misses and adverse events that often occur at their place of work. It is often overlooked however that, in order to deal with situations involving patient safety, professionals need to have in their academic training content and instrumentalization on the subject of “patient safety”. The large majority of professionals are afraid of punitive action, are unaware of what has to be reported and how errors will be analyzed and how they can improve patient safety<sup>(4)</sup>.

In view of this reality, two nursing interventions were developed with 89 nursing professionals from adult inpatient units of a university hospital in Southern Brazil, in an interactive lecture format, in the workplace, programmed according to the days and timetables agreed with the heads of each unit, each session lasting approximately 30 to 40 minutes, between November/2015 and February/2016.

The content of the educational interventions was formulated together with the nurse of the Patient Safety center of the hospital where the study was developed. In educational intervention 1, an introduction to patient safety, safety history, approach of error and safety culture were discussed. In educational intervention 2, the reality of patient safety at the institution was addressed, with an emphasis on recovering the history on the error reporting process – which may or may not have affected the patient – and adverse events – which are necessarily the errors that have occurred and caused harm to the patient<sup>(6)</sup> – and information about the activities of the Patient Safety center (NSP), based on the six safety targets.

In the face-to-face interventions, during the educational action, the professionals expressed that they were unaware of what should be reported and how this information could benefit their professional performance. Thus, the aspect of interest in this research was to verify the potential of these actions so that, based on the

educational interventions, they could understand the importance of knowing the errors that occur in health care and attempting to report them. Thus, it was decided to identify the reports made regarding the adult inpatient units of the place of study during a one-year period and to relate them for three periods: before, during and after the educational interventions.

In this sense, the objective of this study was to evaluate the results of educational interventions on patient safety in the reporting of errors and adverse events.

Evaluating the results of safety education interventions in the institution’s error reporting system permits developing strategies towards all professionals’ commitment to error reporting, contributing to minimize the damage caused to the patients attended at this university hospital.

## **Method**

The study originated from the doctoral dissertation entitled “Nursing Education Interventions: Reflexes in the Patient Safety Culture”<sup>(8)</sup>. It is characterized as a descriptive study with a quantitative approach, undertaken in the reporting system of adverse events, technical complaints and incidents of five adult inpatient units of a university hospital in Southern Brazil.

The study population consisted of the records of the reports made for the research scenario in the one-year period, between 7/1/2015 to 6/30/2016. Based on these records the following variables were evaluated:

Sector: adult inpatient unit where the incident was reported, medical clinic 1, medical clinic 2, surgical clinic 1, surgical clinic 2, gynecological clinic. In this study, we chose to present the results without identifying the sector, adopted at random, characterized as: sector 1, sector 2, sector 3, sector 4 and sector 5.

Error category: category of error related to the type of event, incident or technical complaint notified, following the recommendation of the Health Surveillance Reporting System (NOTIVISA) and informed by the institution’s database, which may be classified as surveillance

errors (drug safety, blood safety, technical safety) or patient safety errors.

Type of error: Classification of the error, incident or technical complaint notified according to its characteristic. Characterized as: medication error, adverse drug reaction, drug quality deviation, drug dispensation error, prescription error, transfusion reaction, hospital material defect/event, equipment defect/event, identification error, procedure error, phlebitis, unintentional exteriorization, pressure ulcer, falls, excess radiation, other (diet change, flooding in the sector, foreign body in the dressing).

Period: period totaling 12 months (7/1/2015 to 6/30/2016), referring to the reporting date of the error in relation to the two educational interventions involving the nursing professionals of the units studied, characterized as: before interventions (7/1/2015 to 10/31/2015, during interventions (11/1/2015 to 2/28/2016) and after interventions (3/1/2016 to 6/30/2016).

Data collection was carried out in July and August 2016, by reading the information related to the reports in the database of the institution's Patient Safety Center, which includes: the place of occurrence, the date and description of the event. Relevant data regarding study variables were recorded in a Microsoft Office Excel® 2003 worksheet developed for this purpose.

The study respected and met the ethical precepts set forth in CNS Resolution 466, 12/12/2012. It was submitted to and received approval from the Research Ethics Committee (CEP) of the Federal University of Santa Catarina (UFSC), under consolidated opinion 1.257.697, CAAE: 48915615.9.0000.0121.

The data were analyzed in IBM Statistical Package for Social Science (SPSS) for Windows, version 20.0 (IBM Corp., Armonk, NY, USA), using descriptive statistics, with absolute and relative frequency distribution. In order to evaluate the results of educational interventions in the reports, the number of reports was compared per period, divided among before, during and after, using Friedman's test, statistical significance being set as  $p \leq 0.05$ . The median, minimum and maximum values and interquartile range of the reports in the periods were calculated to measure possible changes.

## Results

In this study, the analysis considered 292 reports by professionals from the five adult inpatient units in a period of one year, from 7/1/2015 to 6/30/2016, out of a total of 556 reports made throughout the hospital in the same period.

According to the results, the inpatient units presented different numbers in relation to total reports in the year of study and are presented in Table 1, the lowest percentage being found in sector 1 (1.4%) and the highest in sector 3 (44.2%). In relation to the three periods evaluated, the highest percentages are related to the periods during and after the educational interventions, mainly in sectors 1 and 5, with the lowest percentages in the period before the interventions. It is also worth noting that the period during the educational interventions presented the highest number of reports in three of the five inpatient units evaluated.

**Table 1** – Number of reports distributed per period (before, during and after educational interventions) and per adult inpatient unit of a university hospital in Southern Brazil. Florianópolis, Santa Catarina, Brazil – 2015-2016 (N=292) (to be continued)

Inpatient units	Total* n (%)	Periods <sup>†</sup>		
		Before n (%)	During n (%)	After n (%)
Sector 1	4 (1.4)	-	1 (25.0)	3 (75.0)
Sector 2	52 (17.8)	12 (23.1)	28 (53.8)	12 (23.1)
Sector 3	129 (44.2)	14 (10.8)	62 (48.1)	53 (41.1)

**Table 1** – Number of reports distributed per period (before, during and after educational interventions) and per adult inpatient unit of a university hospital in Southern Brazil. Florianópolis, Santa Catarina, Brazil – 2015-2016 (N=292) (conclusion)

Inpatient units	Total* n (%)	Periods <sup>†</sup>		
		Before n (%)	During n (%)	After n (%)
Sector 4	59 (20.2)	9 (15.3)	20 (33.9)	30 (50.8)
Sector 5	48 (16.4)	4 (8.3)	28 (58.3)	16 (33.4)

Source: Created by the authors.

Note: Conventional sign used:

- Numerical data equal to zero not resulting from rounding up.

\* percentages calculated on total reports.

† percentages calculated on total for each sector.

Although the number of reports increased in the inpatient units evaluated, it is noteworthy to what extent the small number of reports the professionals in sector 1 made, with four reports during a year, may be related to underreporting, mainly when compared to the number of reports from the other sectors evaluated.

The increase in the total number of reports is related in the comparisons between the three periods investigated in this study. The results show an increase in the number of reports, corresponding to 256%, when the period before the interventions, with 39 reports, is compared with the period during the interventions, with

139 reports. The period after the educational interventions totaled 114 reports, characterizing a decrease when compared to the period during the interventions. When compared to the period before the interventions however, it reflects an increase by 192%.

The results referring to the type of error are presented according to the classification, according to the error category. Surveillance errors accounted for 65.1% of reports, totaling 190 records. The most frequent types of errors were: drug dispensation error (30.5%) and defect/event involving hospital material (19.5%). The surveillance errors are displayed in Table 2.

**Table 2** – Absolute and relative distribution of surveillance errors reports distributed per period (before, during and after the educational interventions) and error type. Florianópolis, Santa Catarina, Brazil – 2015-2016 (N=190) (to be continued)

Surveillance errors	Total* n (%)	Periods <sup>†</sup>		
		Before n (%)	During n (%)	After n (%)
<b>Drug safety</b>				
Medication error	13 (6.8)	1 (7.7)	5 (38.5)	7 (53.8)
Adverse drug reaction	21 (11.1)	7 (33.3)	8 (38.1)	6 (28.6)
Drug quality deviation	21 (11.1)	10 (47.6)	6 (28.6)	5 (23.8)
Drug dispensation error	58 (30.5)	-	32 (55.2)	26 (44.8)
Prescription error	19 (10.0)	2 (10.5)	3 (15.8)	14 (73.7)
<b>Blood safety</b>				
Transfusion reaction	16 (8.4)	-	15 (93.8)	1 (6.2)

**Table 2** – Absolute and relative distribution of surveillance errors reports distributed per period (before, during and after the educational interventions) and error type. Florianópolis, Santa Catarina, Brazil – 2015-2016 (N=190) (conclusion)

Surveillance errors	Total* n (%)	Periods <sup>†</sup>		
		Before n (%)	During n (%)	After n (%)
<b>Technical safety</b>				
Hospital material defect/event	37 (19.5)	3 (8.1)	13 (35.1)	21 (56.8)
Equipment defect/event	5 (2.6)	-	4 (80.0)	1 (20.0)

Source: Created by the authors.

Note: Conventional sign used:

- Numerical data equal to zero not resulting from rounding up.

\* percentages calculated on total reports.

† percentages calculated on total for each sector.

As for the period, reports during the period during and after the educational interventions were predominant with 45.3% and 42.6%, respectively. No report was found in three categories, drug dispensation errors, transfusion reaction and defect/occurrence involving equipment only in the period prior to the interventions.

In the course of the educational interventions, some nursing professionals reported that, in verifying drugs dispensed by the pharmacy, they identified errors in doses or types of medication dispensed and that this situation could contribute to a medication error. Based on these reports, it could be clarified that this situation should be reported, given the risk of causing harm to patients. Therefore, the NSP and the pharmacy service of the institution would develop strategies

and barriers to avoid these events. Thus, the relationship of educational interventions mainly with the category of drug dispensation error was observed, with higher frequencies between surveillance errors and with reports only during the periods during and after, without any report before the interventions, as these professionals did not know that this type of error had to be notified.

The various types of patient safety errors totaled 102 reports and corresponded to 34.9% (Table 3). Phlebitis was the type of error the professionals reported most, with 26.5%, followed by unintentional exteriorization, which corresponds to the unintentional loss of tubes, drains and catheters, with 21.6% and pressure ulcer, corresponding to 15.7%.

**Table 3** – Absolute and relative distribution of patient safety errors reported per period (before, during and after the educational intervention) and per error type. Florianópolis, Santa Catarina, Brazil. 2015-2016 (N=102) (to be continued)

Types of patient safety errors	Total* n (%)	Periods <sup>†</sup>		
		Before n (%)	During n (%)	After n (%)
Identification error	8 (7.8)	-	6 (75.0)	2 (25.0)
Procedure error	7 (6.9)	-	3 (42.9)	4 (57.1)
Phlebitis	27 (26.5)	2 (7.4)	16 (59.3)	9 (33.3)

**Table 3** – Absolute and relative distribution of patient safety errors reported per period (before, during and after the educational intervention) and per error type. Florianópolis, Santa Catarina, Brazil. 2015-2016 (N=102) (conclusion)

Types of patient safety errors	Total* n (%)	Periods <sup>†</sup>		
		Before n (%)	During n (%)	After n (%)
Unintentional exteriorization	22 (21.6)	4 (18.2)	8 (36.4)	10 (45.4)
Pressure ulcer	16 (15.7)	7 (43.8)	8 (50.0)	1 (6.2)
Falls	10 (9.8)	3 (30.0)	4 (40.0)	3 (30.0)
Excess radiation	3 (2.9)	-	2 (66.7)	1 (33.3)
Others	9 (8.8)	-	6 (66.7)	3 (33.3)

Source: Created by the authors.

Note: Conventional sign used:

- Numerical data equal to zero not resulting from rounding up.

\* percentages calculated on total reports.

† percentages calculated on total for each sector.

Regarding the period, reports occurred mainly during the educational interventions, with 53 reports (52%). In the prior period, however, 16 reports were registered, corresponding to the lowest percentile, with 15.7%. Also during this period, it is highlighted that four of the eight

categories of error types investigated did not present any notification, which did not occur in the periods during and after the interventions, when reports were found in all categories. The Table 4 report the possible effects of these educational interventions.

**Table 4** – Comparison of medians and interquartile ranges, distributed among before, during and after educational interventions, of surveillance and patient safety error reports at five adult inpatient units of a university hospital in Southern Brazil. Florianópolis, Santa Catarina, Brazil – 2015-2016 (N=292)

Variables	Periods			P-value*
	Before	During	After	
<b>Surveillance errors</b>				
Median (Max-min)	5 (0-6)	10 (1-51)	8 (1-35)	0.024
Interquartile range	4.5	29	22.5	
<b>Patient safety errors</b>				
Median (Max-min)	2 (0-9)	11 (0-17)	6 (1-15)	0.179
Interquartile range	7	9.5	9	

Source: Created by the authors.

\* Friedmann's test.

Data on the surveillance errors show that there was a significant difference in relation to

the increase in the number of reports during and after the educational interventions in the adult

inpatient units of the university hospital studied, with a p-value of 0.024. There was a more significant increase during the interventions, with a slight decrease in the period after the interventions, although the values are higher when compared to the period before the interventions, the values are higher.

Regarding the reports of patient safety errors, similarity was found in the increases per periods with surveillance error reports, but the results did not present statistical significance (p-value: 0.179).

## Discussion

The period during and after the educational interventions about patient safety presented the highest number of reports of errors, incidents and technical complaints of the adult inpatient units of the university hospital studied. Thus, the educational interventions may have contributed to the practice of error reporting, granting the Nursing professionals a positive view on the importance of communicating the adverse situations that occur in daily life, impacting the quality of care.

Research performed in surgical wards of a university hospital in Japan presented results similar to those of the present study, demonstrating that brief educational meetings on patient safety lasting 15 minutes during six months increased the reporting rate; the effect of the intervention decreased six months after the completion of the education though, strengthening the need for continuing education in the long term to maintain the positive outcomes<sup>(9)</sup>.

In another study carried out in Chile, it was shown that educational aspects are the main factors for the reduction of errors and especially for the improvement of the patient safety culture, so that professionals need to be integrated in these actions. In addition, it became clear that the training needs have to come from them and not just from management<sup>(6)</sup>.

To encourage and stimulate educational actions, the professionals need working conditions that permit reflections on this need, as

the exhaustive routines end up contributing for the error not to be perceived or, moreover, they permeate the professionals and the institution's view as an acceptable justification. These actions become worrying when it comes to patient safety though<sup>(10)</sup>. Thus, the importance and necessity to develop a continuing and regular education process is reinforced, aiming to improve patient safety and reduce underreporting.

It should be emphasized that this study focused on nursing's view and performance in carrying out patient education and safety strategies, but it is important to emphasize that this responsibility and effectiveness of actions, in order to lead to a positive safety culture, need to work on the entire team, management and other services that are part of health care<sup>(11)</sup>.

The finding related to one of the evaluated sectors, with four reports in one year, reinforces the possibility of underreporting at the hospital studied, where the professionals do not report due to a lack of interest or knowledge, out of fear of the consequences or, also, due to a lack of time because of the work overload.

Underreporting is a significant problem in health error reporting systems because it creates a reservoir of information with inaccurate data that results in an inability to generalize results, triggering a situation where the priorities listed on the basis of these reports are deviated to what "one thinks one knows". Thus, the data found do not express the reality because there are gaps in knowledge about severe incidents due to underreporting<sup>(11)</sup>.

Hence, the small number of reports are considered to be associated with the health professionals' knowledge deficit about the reporting, emphasizing the importance of equipping them for a change of attitude, where the error is seen as an opportunity to improve the work process and patient safety<sup>(10)</sup>. Hence, underreporting may be related to the fact that it is restricted to nurses' registration and also to the voluntary, non-mandatory nature, linked to the lack of time and the absence of the reporting habit<sup>(12)</sup>.

All the professionals of a health institution need to feel empowered to participate in this process of improvement with the objective of guaranteeing safe and high-quality care, and one of the aspects that favor this is precisely the increase of knowledge about the reports<sup>(13)</sup>.

Regarding the type of error, the results showed a higher frequency in relation to surveillance errors, mainly attributed to drug dispensation errors, strengthening the need to implement immediate strategies that permit bringing down these errors and avoid possible patient damage. In the implementation of these strategies, institutional management exerts great weight due to its power to formally establish actions, spend resources and technologies. At the same time, however, the input, evaluation and changes in these systems depend on the professionals, so that the patient safety quality standard is achieved. Therefore, management and care staff should move forward together<sup>(14)</sup>.

The most frequent patient safety errors in this study were phlebitis (26.5%) and unintentional exteriorization of tubes, drains and catheters (21.6%). The high incidence of phlebitis is also present in the reality of other institutions, which suggest educational activities involving the nursing professionals to reduce the occurrence of this inflammation<sup>(15-16)</sup>.

Comparing the findings in relation to the high index of unintentional exteriorization of tubes, drains and catheters, the results of a study that shows nursing as the main responsible in the handling of these devices stand out, so that it becomes responsible for the interurrences. Therefore, it is important to develop specific patient safety actions that target these aspects of care and errors and related adverse events<sup>(17)</sup>. The damage the patient suffers when this type of adverse event occurs reinforces the need to investigate, based on the reports, all the factors that contributed to its occurrence, in order to adopt preventive measures with the professionals involved, mainly regarding the handling of these devices and a safe fixation.

Thus, adverse event reporting is considered a fundamental quality tool, as it permits pointing

out aspects of care that need improvements. Therefore, knowing the diagnosis of an institution's health errors and their consequences for patients is an important step in thinking about policies that ensure the safety of patients seeking care in hospitals<sup>(18-19)</sup>.

The need to ensure safe care led the Brazilian government to create the National Patient Safety Program in 2013, through Administrative Rule 529/13, and Collegiate Directorate Resolution (RDC) 36/2013 of the National Health Surveillance Agency (ANVISA), which established patient safety actions in health services, reinforcing the creation of the Patient Safety Center (NSP), whose guiding principle is the continuous improvement of processes, including the creation and monitoring of an adverse event reporting system<sup>(20-21)</sup>.

Therefore, in order to increase the professionals' reporting, as a strategy, the NSP of the place of study has used the commitment to guarantee the confidentiality of the information, analysis and investigation of the possible causes that caused the error and, mainly, feedback to the reporting professional when identified in the report form.

The encouragement and motivation of Nursing professionals to report an adverse event develops in these professionals the perception of collaboration with the institution, generating an expectation of receiving a return, mainly in relation to the problem-solving ability of hospital management<sup>(12)</sup>. An example of this is a study carried out in a hospital in Southern Brazil, whose findings appoint a 142% growth in the incidents reported in a four-year period (2008 - 2012). Nevertheless, the prevalence is still considered low when compared to the total hospitalizations. The institution's reporting system is considered a possible cause, which requires identification of the notifying professional<sup>(22)</sup>.

In addition to ensuring anonymity in the reports, another factor that may contribute to the increase of reports was pointed out in a study about the participation of the director of the health institution as an educator in some educational intervention, aiming to clarify the non-punitive nature of the response to the error

report, given the presence of a punitive culture in some health organizations<sup>(9)</sup>.

The culture within organizations needs to be in line with the patient safety objectives, so that this need serves as a reinforcement for the development of a safety culture in the workplace. An integrative review on adverse events in nursing care in adult inpatients highlights the importance of reporting and stresses the need to promote a safety culture, allowing the Nursing team to discuss possible prevention strategies that ensure patient safety in health institutions<sup>(23)</sup>.

In this perspective, the development of a safety culture requires the involvement and participation of all professionals, reflecting in a work environment that recognizes the benefits of avoiding that the reported error occurs in the future, guaranteeing better quality and safety in the care provided to the patient, avoiding psychological damages caused to the professional, considered as a "second victim".

The limitations of the study are related to the characteristic and design of the study, being descriptive, which restricts the results to the place of study, without permitting generalizations. Another factor considered as a limit was the short time for evaluation after the interventions and the development with only one profession involved in the process - nursing. Given the multi and interdisciplinary characteristics of patient safety, it is important, to expand the research, to identify these strategies and actions with the entire team.

## Conclusion

Based on the study results, it could be identified that the number of reports by professionals from five adult inpatient units was greater during the educational interventions on patient safety involving the nursing professionals working at these units, corresponding to a 256% increase when compared to the period before the interventions. We believe that, during their participation in the educational interventions, these nursing professionals developed greater commitment to error reporting.

Although the increase in the total number of reports was significant, when evaluating the results in relation to the sector, in one sector, four reports were identified in one year, a fact that may be related to the underreporting.

Drug dispensation errors, phlebitis and unintentional exteriorization of tubes, drains and catheters were the most frequently reported errors, requiring the institution to adopt strategies to reduce mainly the consequences of these errors for hospitalized patients.

In view of the results, it is relevant to implement a continuing education process on patient safety that involves all the institution's professionals, including the study participants, to stimulate and maintain the habit of reporting. Thus, these professionals will feel responsible and involved, recognizing safety as a priority, as well as the planning of actions and strategies for improvement and positive changes in the patient's safety culture.

New studies are suggested in this and other realities, with a greater number of participants and with other research designs, in order to identify the relation and influence of educational activities in the reporting of errors in the context of Brazilian hospitals.

## Collaborations:

1. conception, design, analysis and interpretation of data: Monique Mendes Marinho and Vera Radünz;
2. writing of the article and relevant critical review of the intellectual content: Monique Mendes Marinho, Vera Radünz, Luciana Martins da Rosa, Francis Solange Vieira Tourinho, Patrícia Ilha and Marciele Misiak;
3. final approval of the version to be published: Monique Mendes Marinho, Vera Radünz, Luciana Martins da Rosa, Francis Solange Vieira Tourinho, Patrícia Ilha and Marciele Misiak.

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