

Moderate and severe adverse events in pediatrics: characteristics of incidents reported during the COVID-19 pandemic

Eventos adversos moderados e graves em pediatria: características dos incidentes notificados durante a pandemia COVID-19

Eventos adversos moderados y graves en pediatría: características de los incidentes reportados durante la pandemia del COVID-19

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ABSTRACT

Objective: To verify the characteristics of safety incident reports resulting in moderate and severe harm to pediatric patients in two hospitals during the COVID-19 pandemic.

Method: Cross-sectional study conducted in two hospitals in southern Brazil. The sample consisted of 137 notifications from March 2020 to August 2021. The data were collected through the electronic records of the institutions' notification systems and analyzed using descriptive and inferential statistics.

Results: The most prevalent incidents were related to clinical processes or procedures (41.6%), affecting slightly more females (49.6%) and infants (39.4%). The majority of incidents (48.2%) occurred in inpatient units. The event sector ($p=0.001$) and the shift ($p=0.011$) showed statistically significant associations in both hospitals.

Conclusion: The characteristics of the notifications are similar between the institutions surveyed, with a low number of moderate and severe incidents.

Descriptors: Patient safety. Hospitalized child. Risk management. Pediatric nursing.

RESUMO

Objetivo: Verificar as características das notificações de incidentes de segurança resultantes em dano moderado e grave em pacientes pediátricos de dois hospitais durante a pandemia COVID-19.

Método: Estudo transversal, realizado em dois hospitais no sul do Brasil. A amostra foi composta por 137 notificações correspondentes ao período de março de 2020 a agosto de 2021. Os dados foram coletados pelo registro eletrônico dos sistemas de notificação das instituições e analisados por estatística descritiva e inferencial.

Resultados: Os incidentes mais prevalentes foram relacionados aos processos ou procedimentos clínicos (41,6%), acometeram discretamente mais o sexo feminino (49,6%) e lactentes (39,4%). A maioria dos incidentes (48,2%) ocorreram em unidades de internação. O setor do evento ($p=0,001$) e o turno ($p=0,011$) obtiveram associação estatística significativa nos dois hospitais.

Conclusão: As características das notificações são semelhantes entre as instituições pesquisadas, sendo evidenciado baixo número de incidentes moderados e graves.

Descritores: Segurança do paciente. Criança hospitalizada. Gestão de riscos. Enfermagem pediátrica.

RESUMEN

Objetivo: Verificar las características de los informes de incidentes de seguridad que resultaron en daños moderados y graves a pacientes pediátricos en dos hospitales durante la pandemia de COVID-19.

Método: Estudio transversal realizado en dos hospitales del sur de Brasil. La muestra consistió en 137 notificaciones entre marzo de 2020 y agosto de 2021. Los datos se recogieron a través de los registros electrónicos de los sistemas de notificación de las instituciones y se analizaron mediante estadística descriptiva e inferencial.

Resultados: Los incidentes más prevalentes estuvieron relacionados con procesos o procedimientos clínicos (41,6%), afectando ligeramente más a mujeres (49,6%) y lactantes (39,4%). La mayoría de los incidentes (48,2%) se produjeron en unidades de hospitalización. El sector del suceso ($p=0,001$) y el turno ($p=0,011$) se asociaron de forma estadísticamente significativa en ambos hospitales.

Conclusión: Las características de las notificaciones son similares entre las instituciones encuestadas, con un bajo número de incidentes moderados y graves.

Descriptores: Seguridad del paciente. Niño hospitalizado. Gestión de riesgos. Enfermería pediátrica.

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■ INTRODUCTION

The occurrence of moderate and severe adverse events (AEs) in the care for hospitalized children is related to risks in health care, directly affecting the quality of care and patient safety. Reporting incidents and/or AEs is a key strategy for detecting these events and planning prevention and mitigation actions. Therefore, any circumstance of risk can generate learning and the implementation of measures aimed at minimizing the occurrence of AEs. In this context, the analysis of reported safety incidents assists in planning improvements in the work process, capable of detecting risks during care^(1,2).

AE is defined as the circumstance that resulted in harm to the patient, it is categorized according to the degree of its severity as mild, moderate or severe. An AE is considered mild when it presents minimal and short-term damage, moderate events occur when the consequence in the patient is symptomatic and requires intervention, which may impact the length of hospital stay and/or cause long-term or even permanent damage. A severe AE is one that results in death or serious physical damage, such as the loss of a limb or function or psychological damage⁽¹⁻³⁾.

Studies have shown that 1 in 10 hospitalized patients suffer some unnecessary harm worldwide. In Brazil, an incidence of 7.6% AE was found in hospitalized patients and, out of these, 67% were classified as preventable. Regarding severe AEs related to care, the prevalence is estimated at 1.5%, and in premature newborns the prevalence is 6.2%, well above the average for the study population⁽⁴⁻⁶⁾. The impact of hospitalization on children can generate stress on healthcare professionals working in the environment due to fear of using medical equipment on pediatric patients and interventions and care performed for the first time make assistance more susceptible to risks.

A retrospective study analyzed 3790 pediatric admissions from 16 general and teaching hospitals in the United States, of which 414 events were recorded (19 AEs per 1,000 patients/day). From the 414 AEs presented, 218 (52.7%) contributed/resulted in temporary harm to the patient and required intervention; 146 (35.3%) prolonged hospitalization; 42 (10.1%) posed a life-threatening risk; 5 (1.2%) caused permanent damage and 3 (0.7%) resulted in death of the patient. Furthermore, more than half of the AEs raised by the research were classified (n=210) as preventable⁽⁷⁾. Events considered preventable show the fragility of care and the need for new strategies, with protocol review, updating

of professionals through training and greater inclusion of caregivers in the context of pediatrics.

In March 2020, the World Health Organization (WHO) declared a state of pandemic for coronavirus disease 2019 (COVID-19), an infectious disease caused by the new coronavirus (SARS-CoV-2)⁽⁸⁾. Faced with the new public health emergency situation and significant changes in the work environment, in June 2020, the Brazilian Health Regulatory Agency (*Agência Nacional de Vigilância Sanitária* – ANVISA) issued a statement highlighting the need to reinforce actions to prevent AEs and infections related to healthcare during COVID-19, demonstrating the relevance of routine healthcare being intensified to strengthen patient safety⁽⁹⁾.

The analysis of incident notifications allows for the identification of their characteristics enabling the promotion of strategies for the prevention and reduction of risks in healthcare processes. Therefore, the present study is justified by the importance of identifying the characteristics of reported incidents associated with moderate/severe harm to hospitalized children during the COVID-19 pandemic, since the recognition of these events contributes to implementing mitigation strategies and reviewing the healthcare protocols. The study had the following research question: What are the characteristics of moderate and severe adverse events among hospitalized children during the COVID-19 pandemic?

Thus, the research aimed to verify the characteristics of notifications of safety incidents resulting in moderate and severe harm to pediatric patients in two hospitals during the COVID-19 pandemic.

■ METHOD

This is a study with a quantitative, descriptive and cross-sectional approach. The structure and organization of this article complied with the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist⁽¹⁰⁾.

The research was developed in two large public hospitals in southern Brazil using incident records from the computerized safety incident notification systems of these institutions. Regarding the distribution of pediatric hospital beds, institutions A and B provide 117 and 204 beds respectively.

The data was made available by the institutions' Risk Management through tables in Microsoft Excel® with notifications from March 2020 to August 2021, considering the beginning of the Covid-19 pandemic as the initial time frame and a period of monitoring of notifications to evaluate

changes in the characteristics and profile of adverse events in the pediatric population.

The study population consisted of all notifications of moderate and severe AEs from pediatric patients in the selected period. The institutions were selected since they have a Patient Safety Center and a specialized team to work on risk management. Notifications from pediatric patients (0-18 years old) were included regardless of the unit in which they occurred. Initially, there were 2,063 safety incident notifications as institution A provided a record of all event severity levels, which required a detailed and in-depth analysis to map and identify only notifications related to moderate and severe AEs. After mapping, 345 notifications were included, 312 belonging to institution A and 33 to institution B. Furthermore, notifications of patients in which the events were related to obstetric factors ($n=25$) and incomplete notifications that hindered the collection of the main variables under study ($n=183$) were excluded. However, the lack of detail in some fields of notifications such as sector, gender and shift was not a criterion for excluding the event and were included as "missing", representing omitted or unfilled data, duplicate notifications were considered only once. After applying the eligibility criteria, the final sample consisted of 137 AEs. It was decided not to perform a sample calculation or estimate the sample power, mainly considering the limitations of the database and the high number of exclusions from Institution A.

Data related to the variables gender, age, year of notification, shift, sector, whether it involved assistance, whether it was a preventable event, type of incident, severity of harm and whether immediate action was taken were extracted in full from the primary database. Some notifications did not have all the complete data, therefore a search was conducted on the other data available in the tables. The data related to age group, those involved, notification, incident classification, contributing factors, improvement actions and risk reduction actions were classified by the researchers based on information from the notifications and following the definitions of the Conceptual Framework of the International Classification for Patient Safety, which aims to provide a standardized categorization of concepts related to patient safety according to the World Health Organization^(3,11).

A spreadsheet was prepared with Microsoft Excel® to organize the data and these were analyzed by descriptive and inferential statistics using the Statistical Package for Social Sciences (SPSS) software version 18.0. It is emphasized that the anonymity and confidentiality of the data were preserved.

Categorical variables were described with absolute and relative frequencies. Furthermore, the inferential statistics technique was used, with Chi-Square tests performed to verify the association between the variables, an association was made between the sociodemographic variables and the characteristics of the incidents at institutions A and B. The level of confidence adopted was 95% and statistical significance when $p \leq 0.05$.

This study is part of a matrix project approved under CAAE no. 43549115,0,0000,5347. The recommendations of the Guidelines and Regulatory Standards for Research involving Human Beings of Resolution 466/2012 were complied.

■ RESULTS

A total of 137 notifications of incidents with moderate and severe harm were analyzed between the two hospitals studied. When stratified by institution, 105 notifications were obtained in Hospital A and 32 in Hospital B. The category type of incident was distributed according to the institution, with data being compared between A and B respectively. The most frequent incidents in both institutions were related to the clinical process/procedures, with 41 (39%) in institution A and 16 (50%) in institution B, including events related to care procedures, general care, samples/test results and diagnosis/evaluation. The second category highlighted in the notifications was medication/intravenous fluids with 33 (31.4%) in A and 13 (40.6%) in B, as observed in Table 1.

Data regarding the characteristics of the reported incidents are described in Table 2. Regarding the severity of the incidents, 100 (73%) were related to moderate events and 37 (27%) to severe events. Events that did not involve patient care were considered to be those related to materials that were not related to or interfered with patient care and therefore the majority of incidents involved patient care ($n=135$; 98.5%). Most incidents ($n=128$; 93.4%) were classified as preventable in the analysis. Regarding contributing factors/risk reduction actions, 122 (89.1%) incidents were related to factors associated to the professional, that is, human factors such as behavior, performance, or communication.

In the category immediate action, most of the data were completed in the notifications made by professionals, therefore, most of the events were classified as missing ($n=73$; 53.3%) and around 58 (42.3%) took immediate action. In improvement action, the majority of AEs, 102 incidents (74.5%), were related to patient issues, which included clinical management, management of an injury or apology. It is worth

Table 1 – Distribution of types of moderate and severe safety incidents reported in two hospitals in southern Brazil. Porto Alegre, Rio Grande do Sul, Brazil, 2023

Variable	hospital A	hospital B	total
	n (105) %	n (32) %	n (137) %
Clinical process/ Procedures	41 (39.0%)	16 (50.0%)	57 (41.6%)
Medication/IV Fluids	33 (31.4%)	13 (40.6%)	46 (33.6%)
Clinical administration	12 (11.4%)	0	12 (8.8%)
Devices/ medical equipment	8 (7.6%)	2 (6.3%)	10 (7.3%)
Patient accidents	5 (4.8%)	1 (3.1%)	6 (4.4%)
Nutrition	2 (1.9%)	0	2 (1.5%)
Documentation	1 (1.0%)	0	1 (0.7%)
Blood/blood products	1 (1.0%)	0	1 (0.7%)
Behavior	1 (1.0%)	0	1 (0.7%)
Resource management/ Organizational	1 (1.0%)	0	1 (0.7%)
Infrastructure/building/facilities	0	0	0

Source: Research data, 2022.

noting that some notifications were considered missing due to a lack of information in the spreadsheets provided or because there was insufficient information to classify them. Sociodemographic data are described in Table 3.

Regarding gender and age group, there was a higher incidence of notifications related to females (n=68; 49.6%) and infants (n=54; 39.4%). Regarding the sector, the majority of notifications, 66 incidents (48.2%), occurred in inpatient units (IU), followed by 38 (27.7%) in pediatric and neonatal Intensive Care Units (ICU) and 11 (8.0%) in surgical environments. Statistical significance (p=0.001) was found between the event sector and the hospitals studied. As can be observed in table 3, Hospital A had a

greater distribution than Hospital B among the places where the harm occurred, with the examination and emergency sectors mentioned.

Regarding the shift, most AEs (n=74; 54%) were classified as missing, due to the lack of detailed filling of this data in the notifications. There was also a statistical difference (p=0.011) between the event shift and the hospitals studied, however, it was observed in the study that the frequency of incidents regarding shifts were distributed harmoniously during the day, representing 36.9 % (n=51) of incidents compared to those occurring on the night shift (n=12; 8.8%).

The other variables did not show statistical significance among the associations made.

Table 2 – Distribution of the characteristics of moderate and severe safety incidents, reported in two hospitals in southern Brazil. Porto Alegre, Rio Grande do Sul, Brazil, 2023

Variable	hospital A	hospital B	p*	total
	n=105 (%)	n=32 (%)		n=137 (%)
Severity of harm			0.505**	
Moderate	75 (71.4%)	25 (78.1%)		100 (73%)
Severe	30 (28.6%)	7 (21.9%)		37 (27%)
Involves assistance			0.414**	
Yes	104 (99.0%)	31 (96.9%)		135 (98.5%)
No	1 (1.0%)	1 (3.1%)		2 (1.5%)
Preventable event			0.213**	
Yes	100 (95.2%)	28 (87.5%)		128 (93.4%)
No	5 (4.8%)	4 (12.5%)		9 (6.6%)
Contributing factors/risk reduction action	94 (89.5%)	28 (87.5%)	0.867**	122 (89.1%)
Personnel factors				
Work/environment factors	4 (3.8%)	3 (9.4%)		7 (5.1%)
Patient factors	5 (4.8%)	1 (3.1%)		6 (4.4%)
External factors	2 (1.9%)	0		2 (1.5%)
Immediate action was taken				
Yes	32 (30.5%)	26 (81.3%)		58 (42.3%)
No	-	6 (18.8%)		6 (4.4%)
Missing	73 (69.5%)	0		73 (53.3%)
Improvement action			0.363**	
Diseased	76 (72.4%)	26 (81.3%)		102 (74.5%)
Organization	29 (27.6%)	6 (18.8%)		35 (25.5%)

Source: Research data, 2022.

*Linear-by-linear association chi-square test.

**Fischer's Chi-Square Test.

Table 3 – Distribution of sociodemographic data on moderate and severe safety incidents reported in two hospitals in southern Brazil. Porto Alegre, Rio Grande do Sul, Brazil, 2023

Variable	hospital A	hospital B	p*	total
	n=105 (%)	n=32 (%)		n (137) %
Gender			0,226**	
Female	55 (52.4%)	13 (40.6%)		68 (49.6%)
Male	45 (42.9%)	19 (59.4%)		64 (46.7%)
Missing	5 (4.8%)	0		5 (3.6%)
Age group				
Infant	35 (33.3%)	19 (59.4%)		54 (39.4%)
Newborn	29 (27.6%)	0		29 (21.2%)
Adolescent	23 (21.9%)	6 (18.8%)		29 (21.2%)
School-age	12 (11.4%)	3 (9.4%)		15 (10.9%)
Preschool	6 (5.7%)	3 (9.4%)		9 (6.6%)
Missing	0	1 (3.1%)		1 (0.7%)
Event date			0,547**	
2020	55 (52.4%)	19 (59.4%)		74 (54%)
2021	50 (47.6%)	13 (40.6%)		63 (46%)
Sector			0,001*	
Inpatient unit	44 (41.9%)	22 (68.8%)		66 (48.2%)
ICU	36 (34.3%)	2 (6.3%)		38 (27.7%)
Surgical environment	5 (4.8%)	6 (18.8%)		11 (8.0%)
Emergency	9 (8.6%)	1 (3.1%)		10 (7.3%)
Examination sector	6 (5.7%)	0		6 (4.4%)
Outpatient clinic	3 (2.9%)	1 (3.1%)		4 (2.9%)
Missing	2 (1.9%)	0		2 (1.5%)
Shift			0,011**	
Morning	7 (6.7%)	17 (53.1%)		24 (17.5%)
Afternoon	14 (13.3%)	13 (40.6%)		27 (19.7%)
Night	10 (9.5%)	2 (6.3%)		12 (8.8%)
Missing	74 (70.5%)	0		74 (54%)

Table 3 – Cont.

Variable	hospital A	hospital B	p*	total
	n=105 (%)	n=32 (%)		n (137) %
Involved¹				
Patient/Companion	105 (100%)	32 (100%)		137 (100%)
Professional	0	0		0
Notifier²				
Professional	105 (100%)	32 (100%)		137 (100%)
Companion/ Others	0	0		0

Source: Research data, 2022.

*Linear-by-linear association chi-square test.

**Fischer's Chi-Square test.

¹Individuals affected by the adverse event.

²Individuals who reported the occurrence of the adverse event.

DISCUSSION

The data from this research are similar to the results found in other studies that address the characteristics of safety incidents before and also during the COVID-19 period^(9,12-14). It is worth noting that institution A had more than triple the number of incident records (n=105) compared to institution B (n=32), a fact that may be related to the greater encouragement and proposal of strategies for notification in the institution A, for the continuous development of a safety culture and for having an international certification process by the Joint Commission International. Additionally, the COVID-19 pandemic may have influenced the proactivity of the notification process in both institutions that were state references for the treatment of the disease across all audiences.

The pandemic scenario resulted in conditions of greater work stress and work overload in healthcare services. Additionally, professionals had to readapt in the development and implementation of various protocols to ensure patient safety in an environment of potential risks and harm to the child^(14,15).

Actions focused on safe care become even more relevant when aimed at children, it is known that in pediatrics the risk factors for incidents are higher^(15,16). The study identified similarities between the characteristics of notifications of safety incidents in both institutions. The research showed that the incidents in the clinical processes/procedures category with 57 incidents (41.6%) is the most recurrent, converging with a research conducted in Queensland/Australia that analyzed

severe clinical incidents involving children that resulted in permanent damage or death in public hospitals, among the findings, the most common type of incident was related to processes and procedures, representing n=13 (30%) of the total sample n=42 (100%)⁽¹⁷⁾.

Incidents related to medication/IV fluids 46 (33.6%) were also frequent in this research. A study conducted in France analyzed medication incidents in pediatrics, with its analysis based on 1,570 actual and potential medication errors reported for pediatric populations, n=791 (50.4%). The administration phase (n=1,214; 78.9%) was responsible for most of the reports of pediatric medication errors. As for the causes of medication errors reported in pediatrics, they were mainly related to healthcare professionals (n=590; 76.6%)⁽¹⁴⁾.

This result can be justified by the doses administered to pediatric population, which can be very small and diluted, considering the need for individualized calculations based on the child's age and weight. Additionally, the different stages of development of pediatric patients can also result in variations in pharmacokinetic parameters^(18,19). It is noteworthy that most studies on the topic analyze all levels of severity of AEs and do not focus specifically on moderate and severe safety incidents as in this research.

Regarding the sociodemographic profile of children, the majority of AEs were related to infants (n=54; 39.4%) and female gender (n=68; 49.6%). However, some research differs as to which gender is most affected. A study conducted during the pandemic shows that 60.2% of incidents affected children between 29 days and 5 years old, with these incidents occurring predominantly in males (66%)⁽¹³⁾.

The IU (n=66; 48.2%), ICU (n=38; 27.7%) and surgical center (n=11; 8.0%) represented the places with the highest prevalence of AEs in this research. The data found in our results is similar to other research that analyzes the occurrence of safety incidents. Estimates can vary between 20% and 35% in IU, 19% to 33.8% in Pediatric ICU and 15% to 21.9% in surgical centers when compared to other sectors^(12,17,20,21).

Inpatient units have more beds and patients stay more time in these sectors, especially those with chronic illnesses. Several complex technologies and procedures are used in intensive care and, consequently, this place tends to a higher incidence of AEs, as well as in surgical environments, where patients are prone to a variety of complications⁽²⁰⁾.

Regarding the shift with the highest occurrence of events, the research identified that the day shift was the most prevalent. These data may be related to the greater number of healthcare activities, procedures and exams that occur during the day. Studies identified similar findings, including the absence of this information in the records^(19,21,22).

Regarding the notifier, the findings of this study showed that all notifications were made by healthcare professionals, which highlights the lack of participation/guidance for family members and companions of hospitalized children regarding their inclusion in the notification process. A documentary and retrospective study aimed to identify AEs reported in a pediatric surgical unit and characterize their triggering factors. A total of 142 AEs were identified. Out of these, 70 (49.3%) were accompanied, however, no incident in the study was reported by companions/family members⁽²³⁾.

Events considered preventable (n=128; 93.4%) corresponded to more than half of the AEs in this study, indicating weaknesses in work processes. A similar research conducted in the United States classified half of the AEs (n=210; 50.7%) as preventable⁽⁶⁾. A fact that expresses the relevance of the issue and the urgency for actions that minimize the occurrence of preventable harm to patients.

Another variable analyzed was the severity of the harm, with the majority of AEs classified as moderate (n=100; 73%) in this study. Research conducted in Costa Rica during the pandemic period showed that 42% of events caused harm to the patient, of which 18% were related to moderate harm and 2% to severe harm⁽¹³⁾. Another study conducted with 842 children hospitalized in a Pediatric ICU analyzed the record of severe incidents, finding that 142 (16.86%) suffered AE, 6 (0.71%) presented morbidity and 33 (3.92%) progressed to death. Multivariate analysis revealed that the occurrence of AEs was significantly associated with morbidity and mortality (95% CI, p=0.001). This association was independent of age and disease severity⁽²⁴⁾.

The proportion of moderate and severe AEs is not considered high in healthcare services due to all efforts over the years to reduce risks to patient health and increase the quality of care. However, these events can result in irreversible physical/psychological damage to the patient and prolong their hospitalization time. These factors may directly influence on the notifications made, as healthcare professionals remain more attentive to the importance of recording given the severity of the harm caused^(24,25).

A quantitative study with an observational, descriptive, correlational design conducted in Mexico aimed to describe the organizational ethical climate and its relationship with the patient safety culture. The sample consisted of 168 nurses who identified negative outcomes within the organization regarding dimensions related to feedback and communication about errors⁽²⁶⁾.

It is important to emphasize the relevance of recording complete data in incident reports and implementing strategies to reduce underreporting. The notification system has advantages such as low cost, easy access, and anonymity, however, there are several reasons why healthcare professionals do not notify, and among the most frequent is the fear of punitive culture from supervisors or the institution. Additionally, AEs with harm can have repercussions on the professional's life beyond the hospital setting⁽⁵⁻¹³⁾. Underreporting was already considered a limitation in the area of patient safety and incident reporting even before the advent of the pandemic. However, it became more significant during this period, highlighting the fragility of the safety culture in institutions during the pandemic scenario. The landscape of incidents demonstrates that organizational culture and the use of other notification tools must be reconsidered.

Regarding the variable whether immediate action was taken, more than half of the AE notifications (n=73; 53.3%) did not have this information filled out, hindering researchers from conducting a more in-depth analysis. It is evident that all fields of the notification must be filled out in detail to evaluate the actions taken by professionals in response to harm and enable improvement actions.

Patient safety depends on adherence to strategies that aim to avoid preventable AEs and, when this is not possible, minimize their consequences. To provide safe care for children, it is necessary to have a systemic vision and effective communication within the teams involved. As a result, the nurse is the professional who spends most of their working time at the bedside with the patient, providing and managing health care⁽⁵⁾. In this context, the professional is competent to identify possible failures in care processes and propose

decisions aimed at safe care. However, the lack of recording of notifications and underreporting is a recurring problem, but in institutions with a solid patient safety culture there is great potential for developing actions and improvements.

A documentary study aimed at analyzing the decision-making of nurses in incidents related to patient safety identified that less than half ($n=67$; 34.2%) of decisions made by nurses to resolve or mitigate the damage were performed. The decisions were classified as improvement actions, with a greater number of records related to the medical team and other professionals, suggesting that the harm involved in such incidents may have been mitigated by the actions of the nurses⁽²⁷⁾.

The contributing factors and actions to reduce risk were directly related to personal/professional factors ($n=122$; 89.1%), findings that corroborate a study conducted in an international scenario, in which human factors (92.1%) were responsible for most of this category. In the study, factors such as communication, interpersonal skills and compliance with the procedures established by the institution were mentioned⁽²⁸⁾.

The role of healthcare managers is essential to change the safety culture in a given location. Risk management involves learning from failures and preventing new incidents related to healthcare, so that the analysis and detection of these events generates measures to prevent their occurrence. The importance of the manager goes beyond the creation of institutional policies and protocols, there is a need to promote interaction between the entire healthcare team and ensure their engagement⁽²⁵⁾.

A research conducted in a neonatal ICU in Egypt sought to analyze safety incidents in the sector. From the total sample ($n=2,724$), 43.2% of incidents were AEs and of these, 5.92% were classified as severe events. The main contributing factors were related to education/training in 28.26%, followed by communication failure in 27.82%⁽²⁹⁾.

Managers should encourage and provide collective and individualized spaces for discussions on the subject, identify weaknesses in the face of errors, as well as provide feedback. When professionals are included in the entire process, the reflection that emerges in this conduct highlights the learning about errors and the ability to reproduce the knowledge that was problematized in the analysis of the reported incident. Furthermore, professionals need to be trained in the definitions and concepts on the subject, thus knowing the risk circumstances that can lead to damage, minimizing its occurrence and enabling healthcare professionals to take appropriate actions⁽³⁰⁾.

The limitations of the study were related to the incompleteness of notifications, presenting insufficient information for analysis. The search for references in national and international databases was also a limiting factor in comparing the data, since there is a lack of studies addressing the landscape of notifications in pediatrics, using the international patient safety classification related to the severity of harm.

■ CONCLUSION

The study showed that the characteristics of reported AEs are similar in the selected institutions and maintained the characteristics before the pandemic in pediatric units. The most recurrent events in both institutions were related to clinical process/procedure and medication/IV fluids. The shift in which the most incidents occurred based on notifications was during daytime, with healthcare professionals being responsible for all records. The profile of children most affected were females and infants. Preventable events represented the majority of incidents, affecting the patient and mostly causing moderate harm.

The results of this study can help to map the characteristics of AEs, guiding childcare and identifying their risk factors. Thus, analyzing incidents allowed understanding the weaknesses in processes within the institutions, supporting the development of improvement strategies that can minimize the occurrence of AEs and qualify the care provided to children.

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