v. 2, n. 26, 2022

International Journal of Health Science

PATIENT SAFETY INCIDENT NOTIFICATION REPORTING SYSTEMS: SCOPE REVI

Renata Lima G Caroccini

Elena Bohomol

Geisa Colebrusco de Souza Gonçalves

Andreia Cristina Feitosa do Carmo

Abstract: Goal: To identify in the scientific literature which are the characteristics of patient safety incident notification systems that contribute to organizational learning. **Methods:** Scope review carried out based on the quality parameters of: *Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews – PRISMA-ScR*, with protocol published on the Platform: *Open Science Framework* (OSF) to answer the following question: what are the characteristics and qualities of incident reporting systems that contribute to organizational learning and patient safety? The categorization of articles followed the World Health Organization (WHO) guideline entitled:Minimal *information model for patient safety incident reporting and learning systems: user guide.* **Results:** We observed a variability of health services among the 18 scientific productions published between 2010 and 2020 on the notification system. Of these, xxx% had as their main purpose learning about patient safety. Supporting efforts to represent the balance of the 11 consistent attributes of a minimum model of characteristics of a system vvv% voluntary, confidential to the notifier and the institution, analyzed by risk management experts, with analytical capabilities for detecting causal factors and contributing to event occurrence. With xx% dissemination of public information pertinent to newsletters and trend alerts that can decrease the recurrence of adverse patient events. **Conclusions**: to re-do remember the purpose of the work.
Keywords: Electronic Health Records; Risk management; Patient safety.

INTRODUCTION

Even after a decade of the publication of the report "To err is human", by the Institute of Medicine, in favor of changing the global, national and local culture of patient safety to reduce risk, avoid harm and improve health care, still today, gaps are identified in relation to adverse event reporting systems [1].

Patient safety is defined by the World Health Organization (WHO) as the prevention of errors and adverse events in patients associated with health care. [2,3]. Recently, the W.H.O. set as a goal for the next ten years the maximum possible reduction related to avoidable harm from health care worldwide. [4].

Despite advances in patient safety, a Canadian study found that the overall incidence rate of adverse events was 7.5% in the approximately 2.5 million annual hospital admissions, and about 70,000 of these events were potentially preventable. [5]. These data have significant implications for patient mortality and negatively affect care in different contexts during health care delivery. [6].

A series of recommendations to achieve patient safety were highlighted as priorities by W.H.O. in 2020, in order to generate learning about the events. In this sense, the incident report can be considered a source of information to clarify the reason for its occurrence and how to engender measures to prevent recurrence. [7].

The need to carry out a review of notification systems arose due to the challenge faced by health services, especially with regard to the characteristics of the systems, to interact with users (patients and/or professionals) in a satisfactory way. In addition, a system that presents accurate information for event analysis, contributing to organizational learning [8], mitigating its likely recurrence or occurrence when it comes to near miss.

In 2005, the W.H.O. presented guidelines to assist countries in the development of systems that generate patient safety reports in order to learn from them and improve the safety of patient care.[3].

However, there is still a gap associated with the consolidation of records in existing systems, as they present institutional weaknesses, whether due to insecurity on the part of professionals regarding the ethical-legal issues involved in the notification or the absence of a specific sector to handle this information. There are also weaknesses in relation to the notification system itself, related to which information is important, to the subjective aspects of how this report will be made and in what format the information will be requested to be filled in by the user (patient/professional).

The lack of standardization in the information collected, or even a very complex system, makes it difficult for the notification to unfold into organizational learning. Thus, the need to know how the notification systems described in the literature have collaborated in organizational learning is justified, that is, what are the main characteristics of incident notification systems.

GOAL

Identify in the scientific literature which are the characteristics of patient safety incident reporting systems that contribute to organizational learning.

METHODS

This is a scope review with the purpose of synthesizing the state of knowledge on a given subject, carried out based on the quality parameters of: *Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews – PRISMA-ScR* [10] and the protocol published on the Platform: *Open Science Framework* (OSF)[11,12].

To carry out the research question, the PCC strategy was used, in which the P is equivalent to the Population or Problem, that is, the notifications of incidents made by patients, health professionals and health managers (users of the notification systems of incidents); C for Concept, that is, related to the type of patient safety incidents reported in a computerized system; and C for Context, which are health care institutions.

The selection of publications includes all complete studies in Portuguese, English and Spanish, published from January 2005 (the date of publication of the WHO guidelines for systems development), (10) until the period of February 2021.

As inclusion criteria, studies were considered that described types of systems, characteristics and learning attributes arising from the electronic notification of a patient safety incident report available in the database.

Quantitative, qualitative methods, letter to editors and editorial studies were included in order to consider different aspects of the conceptual framework of the study, focusing on defining characteristics.

Theses, dissertations and book chapters were excluded from the study; studies using non-computerized systems; study on weaknesses in notification systems; and reporting systems that do not fit the research question.

The search strategy retrieved studies with greater sensitivity on the subject, created from descriptors in Health Sciences (DeCS) and Medical Subject Headings (MesH) and inclusion of terms and keywords present in titles and abstracts.

After using the search strategy for each database of retrieved articles, the information was extracted and a two-step peer review was performed for the selection of studies: the first consisted of reading the titles and abstracts by two judges, independently, with the help of the free-to-use application: *Rayyan QCR*[11]. Inconsistencies between the two judges were evaluated by a third reviewer, who decided to include or exclude the study.

Database	Search Strategy
PubMed	("Learning Health System"[All Fields] OR "Adverse Drug Reaction Reporting Systems"[All Fields] OR "Mandatory Reporting"[All Fields] OR "Database Management Systems"[All Fields] OR "Health Information Management"[All Fields] OR "Health Information Systems"[All Fields] OR "Electronic Health Records"[All Fields]) AND ("monitor*"[All Fields] OR "report*"[All Fields] OR "investigat*"[All Fields] OR ("drug delivery systems"[MeSH Terms] OR ("drug"[All Fields] AND "delivery"[All Fields] AND "systems"[All Fields]) OR "drug delivery systems"[All Fields] OR "system"[All Fields] OR "system s"[All Fields] OR "systems"[All Fields])) AND ("adverse effects"[All Fields] OR "Long Term Adverse Effects"[All Fields] OR "Nocebo Effect"[All Fields] OR "Iatrogenic Disease"[All Fields] OR "near miss healthcare"[All Fields] OR "Medical Errors"[All Fields]) AND ("Safety Management"[All Fields] OR "Risk Assessment"[All Fields] OR "Risk Management"[All Fields] OR "Patient Safety"[All Fields])
Embase	("learning health system" OR "reports administration" OR "mandatory reporting" OR "mandatory reporting adverse effects" OR "databases administration" OR "health information management" OR "health information systems" OR "electronic health records") AND ("adverse health care event adverse effects" OR "long term care adverse effects" OR "iatrogenic disease") AND ("safety administration" OR "risk assessment" OR "risk management" OR "patient safety")
Lilacs	tw:((notificação OR "Reações Adversas" OR "registros eletrônicos de saúde") AND (monitor* OR relatório* OR investigat* OR sistema*) AND ("efeitos adversos" OR "efeito nocebo" OR "near miss" OR "erros médicos") AND ("gestão da segurança" OR "medição de risco" OR "gestão de riscos" OR "segurança do paciente"))
Cinahl	("learning health system" OR "reports administration" OR "mandatory reporting" OR "mandatory reporting adverse effects" OR "databases administration" OR "health information management" OR "health information systems" OR "electronic health records") AND ("adverse health care event adverse effects" OR "long term care adverse effects" OR "iatrogenic disease") AND ("safety administration" OR "risk assessment" OR "risk management" OR "patient safety")
Scopus	("learning health system" OR "reports administration" OR "mandatory reporting" OR "mandatory reporting adverse effects" OR "databases administration" OR "health information management" OR "health information systems" OR "electronic health records") AND ("adverse health care event adverse effects" OR "long term care adverse effects" OR "iatrogenic disease") AND ("safety administration" OR "risk assessment" OR "risk management" OR "patient safety")
Web of Science	("learning health system" OR "reports administration" OR "mandatory reporting" OR "mandatory reporting adverse effects" OR "databases administration" OR "health information management" OR "health information systems" OR "electronic health records") AND ("adverse health care event adverse effects" OR "long term care adverse effects" OR "iatrogenic disease") AND ("safety administration" OR "risk assessment" OR "risk management" OR "patient safety")

Table 1 - Search strategy in the databases.

After reading the selected and analyzed studies in full, their objectives, results and discussion, the information extracted was summarized to include the following variables: country and year of publication; type of system presented; system responsiveness to reported incidents; notes in relation to the institution's learning and quality characteristics evidenced in health organizations.

To categorize the studies, we used the WHO theoretical framework entitled "Minimal information model for patient safety incident reporting and learning systems": *user guide*"[3], which describes 11 characteristics for the development of a notification reporting system – written in free translation performed by the researcher –, namely: 1. Objectives of the system (learning, responsibility or both); 2. Priority learning types (alerts on significant new hazards, incident analysis, process analysis, systems failure analysis and best practice recommendations); 3. System (voluntary or mandatory); 4. Disclosure of information (confidential or public. If public: disclosure is made through individual reports, analysis or trends); 5. Flow for the notification in the system (what is reported, who can notify and how is the notification); 6. Security of confidentiality of information (patient, notifier, organization); 7. Data structure (analysis performed by those who recognize the hazard information, simple spreadsheet or database with interface); 8. Approach to the classification of the event (by type of event, by risk or by causality); 9. Approach to event analysis (hazard identification, summaries and descriptions, trend and cluster analysis, correlations, risk analysis, causal analysis or systems analysis); 10. Generation and dissemination of responses (thanks to the notifier, alerts generated for organizations, trends, themes or best practices in periodic newsletters); and, 11. Presentation of system features (by reporting mechanism, database management, ability to investigate, technical infrastructure, event classification method, expert analysis, or ability to disseminate results and recommendations).

RESULTS

Of the studies identified in the selected databases, 222 were duplicates and 60 did not meet tangible inclusion criteria. After reading 118 full texts, 18 studies were included in the review as presented in *PRISMA-ScR*[10]. (figure 1).

Table 2 provides an overview of the findings distributed in the variables studied. American publications are prevalent and the largest number of publications was in 2015. The types of system identify information related to adverse events in general, however, they suggest specific areas, such as primary care, oncology, obstetrics, chiropractic, among others.

Table 3 presents the classification of articles based on the guide "Minimal information model for patient safety incident reporting and learning systems", from the World Health Organization.

DISCUSSION

The relevance of understanding the reporting system is a measure to mitigate harm through transfer of learning.

According to this study on the management of notifications, its existence is essential to enable professionals to learn from failures, based on their own notified events. [35].

It was concluded in a separate study, carried out in three states in the southern region of Brazil, how much impact notifications have on the development of mitigation strategies, mainly related to the continuous learning of professionals in the face of reported adverse events[36].

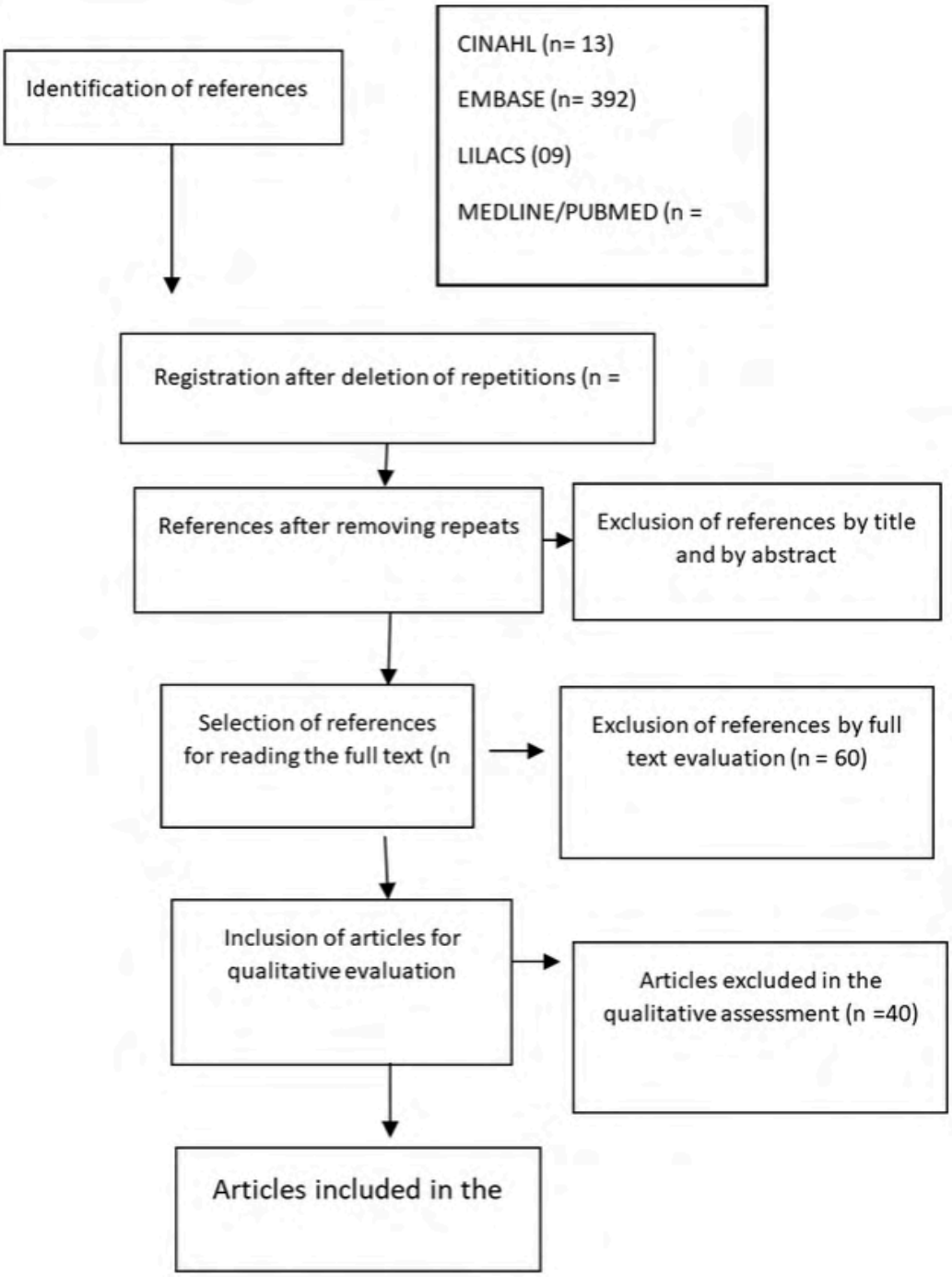
Identification of references
CINAHL (n= 13)
EMBASE (n= 392)
LILACS (09)
MEDLINE/PUBMED (n =
Registration after deletion of repetitions (n =
References after removing repeats
Exclusion of references by title and by abstract
Selection of references for reading the full text (n
Exclusion of references by full text evaluation (n = 60)
Inclusion of articles for qualitative evaluation
Articles excluded in the qualitative assessment (n =40)
Articles included in the

Figure 1.

Article Country and year	Types of system	Incident response capability	Learning Production	Quality characteristics evidenced in health organizations
Article 1 [13] Iran, 2020	Reporting of medical incidents in the patient safety process at different health levels of hospitals and health care services.	Investigations conducted by means of reporting consequences, judicial follow-up, punitive managerial behaviors.	It allows, in addition to reporting, to participate in analysis sessions that can create a safety culture.	To increase bug reporting rate.
Article 2 [14] Switzerland, 2020	Notification of anesthesiologists about patient safety and prevention of perioperative failures.	Effective for data analysis, implementation of local action of the nature of damage and recurrence monitoring.	It favors the improvement cycle of clinical protocols and aggregates the analyses.	Effective when they belong to clinical teams and when data analysis and action implementation take place locally.
Article 3[15] India, 2020	Systematic monitoring system of medical devices associated with adverse events.	Proactive identification of monitoring and evaluation.	It offers training through basic and advanced system training.	To ensure reports with quality data.
Article 4 [16] United Sates, 2017	Adverse Event and Near Miss Reporting System in Obstetrics.	It submits event reports to an analysis driving algorithm.	It provides feedback through structured summaries in a timely manner.	It enables additional event classification with security taxonomy and terminology.
Article 5 [17] United Sates, 2016	Reporting systems in primary care.	Near Miss collaborative report to improve patient safety.	Opportunity to learn and reduce cost.	A monetary incentive can harm the quality of reports.
Article 6 [18] United States, 2016	Risk factor reporting system in a short text structured format describing patient safety events.	It allows reporting of contributing factors according to the type of event, including the degree of damage, until the root cause is identified.	It provides a step-by-step approach to reviewing the chronology of events, contributing factors and applicable preventative measures.	Perception of the relevance and purpose of incident reporting.
Article 7 [19] United States, 2016	Safety reporting system, medical device safety and after-sales surveillance.	It enables critical data integrity and quality.	It features mandatory fields that enhance reporting. If these fields are not filled in and warnings that are triggered.	Suite of services that help hospitals fill gaps in safety reports.
Article 8 [20] France, 2015	Reporting system for patient safety carried out by the National Agency for Patient Safety.	It allows semantic-based comparisons of incident reports	Compatibility of various patient safety taxonomy and information processing systems.	It promotes corrective actions and permanent prevention of patient safety.
Article 9 [21] United States, 2015	Notification system of accredited organizations of the *Joint Commission International.*	It has a coded data system for Detect checklists and proactive risk assessment .	Collective mindfulness focused on identifying, reporting, analyzing and reducing hazardous health-related conditions.	To facilitate the identification of risks and hazards, for any organization, on security issues.
Article 10 [22] United States, 2015	Ontology-based notification system to manage patient safety events across the *Agency for Healthcare Research and Quality.*	It uses compatible semantic ontology source taxonomy; format that includes patient safety events.	It provides environment to aggregate and share patient safety.	Knowledge base cooperating with other data sources and ontologies.

Article 11 [23] United States, 2015	Event reporting system in a department of radiation oncology, safety culture and incident prevention.	Events are described using a free text field and drop-down menus to categorize the type and severity of events.	Streamlines quality and safety in a radiation oncology department, increasing event reporting and promoting a culture of safety.	The program is widely accessible, easy to use and can significantly analyze data.
Article 12 [24] Greece, 2014	Recording system that highlights the "trigger" concept to identify adverse events in a medical record.	Comprehensive and effective system; managed to detect the main factors that cause adverse events.	Visible action to mitigate important risks identified in the reports.	Fair and reliable information culture.
Article 13 [25] Iran, 2013	Iranian nosocomial infection control system implemented in hospitals, based on Centers for Disease Control program.	In addition to identifying, recording and analyzing nosocomial infections, the system is responsible for collecting reports on undesirable drug effects.	All reports are analyzed in this center that publishes security alerts and newsletters.	It uses the "trigger" concept to identify adverse events in the medical record recently used by:*Institut for Healthcare Improvement*.
Article 14 [26] Canada, 2012	Statistical reporting system and bulletin with feedback from notifications and lessons learned.	It features a set of components designed and implemented to collect, record, report and analyze patient and their safety data to learn from past mistakes.	Disseminate lessons learned among healthcare organizations.	Patient participation in reporting is encouraged.
Article 15 [27] United Kingdom, 2011	Patient safety incident reporting system in the context of chiropractic practice.	Appropriate use of data gathering information on patient safety issues.	Creation of relevant and structural guidelines for system accessibility.	A reporting system must have a clear purpose and clear objectives. It must be obvious to the user who must report and what must be reported.
Article 16 [28] Portugal, 2011	Adverse event reporting system in the field of medical imaging.	Used an Eindhoven classification model to classify root causes.	Network of patient safety databases to analyze statistics on patient safety events.	The analysis process becomes easier, faster and more reliable.
Article 17 [29] Australia, 2011	System for reporting incidents of adverse events and reporting in the pre-hospital environment.	It Identifies processes to reduce or mitigate incidents.	It identifies and implements changes to reduce the likelihood of the same incident happening again.	Mechanism that allows for timely, fast, simple to complete and readily available incident reporting.
Article 18 [30] United Kingdom, 2010	Adverse event notification and learning system.	It allows judgments about the impact, place of occurrence and type of event recorded in different health institutions.	It is possible to detect adverse events that need immediate attention and recommendations for improvement.	Use the preventive measures classification model to avoid errors or mitigate their effects.

Table 2 - Synthesis of articles included in the integrative review.

Guide items	Classification of articles
1. System Objectives	Learning [13-30] Accountability [25]
2. Priority types of learning	Alerts on significant new hazards [18,21,25] Incident Analysis [13,14,16,18,20,22,24,26,30] Process analysis [13,16-18,20,24,26,30] Failure analysis [15-20,22,24,26-30]
3. System	Volunteer [13,17,24,25,27,28,30] Mandatory [14,25] Not specified [15,16,18,20-23,26,29]
4. Disclosure of information	Confidential disclosure [14,27] Public release of individual report [13,16,21,22,25,29,30] Public disclosure of analysis and trends [19,20,21,28] Not specified [15,17,18,23,24]
5. Flow for notification in the system	Health professionals [13,16,23,25-29] Doctors [14,15,25] Patient and family [13,26] Not specified [17-22,24,30] Computerized system, online with database [13-16,20-22,24-30] System: *software* [19]
6.Security of information confidentiality	Patient confidentiality [16,19,27-29] Notifier's confidentiality [13,16,19,21,23-30] Organization confidentiality [19,27] Not specified [14,15,17,18,20,22]
7 Data structure	Expert risk analysis [13,16,19,23,24,26,27,29,30] It uses tracking sheet [25] It has a database [13-16,18,19,21,22,23,25,28] Not specified [17,20]
8. Approach to event classification	By type of event [13,18,20,22-30] By risk [20,21,28,30] By causality [14-17,19,20,28,30]
9. Approach to event analysis	Risk analysis [18,20,22-24,26,27,29,30] Summary with analysis description [13,16,18,20,27,28,30] Cause Analysis [14-20,22,23,26,27,30] Correlation by trend and similarit [16,18-20,25,28,30]
10. Generation and dissemination of responses	Thanks to the notifier [15,16,24,27,30] Alerts generated for organizations [21,26,30] Trends [13,14,18,28,30] Periodic newsletters [13,30] Not specified [17,19,20,22,23,25,29]
11. Presentation of system resources	To analyze [15,21-23,27,30] To publish [13,14,17-21,24, 26-28,30]

Table 3 - Classification of articles according to the W.H.O. (World Health Organization) guide.

Equal to the impact of learning, it is favorable that the system offers favorable conditions for the investigation of causes with a view to redesigning practical prevention processes. It was observed, during this study of the information system of notifiable diseases, that the constant development of the epidemiology of the causes subsidizes the decision making based on indicators [37].

The highest prevalence of publications in this integrative review was 18 articles, published in 2015, in the United States.

The types of systems referring to the present study correspond to hospital environments, related to anesthesia, obstetrics, oncology, imaging services and infections related to health care. But, we also observed specific primary care services, association of medical-hospital devices and chiropractic.

The entirety of the system's objectives are learning about patient safety.

As for the electronic system's ability to respond to incidents, the results presented an opportunity for proactive investigation, reporting of contributing factors according to the type of event, integrity and quality of critical data, coded data to detect checklists and taxonomy compatible with the patient safety events. Events using a free text field were rarely mentioned.

In the forms of learning production, structured training to strengthen a safety culture, among others, are highlighted.

The quality characteristics of the system most evident in health organizations, regarding the qualitative integrity of information and reports, are: summarized and structured; agile, easy and reliable; presence of chronology of the facts; compatibility with open field items for database cause analysis narratives, with information processing capabilities based on different proposals.

This study presents a complete system of a medical version of the Eindhoven Classification Model (ECM), which allows detecting adverse events that need immediate attention by identifying and assigning codes to the causes of each adverse event – which are useful for tracking, trending of results, causes – and generating recommendations for improvements [39].

There are types of incident classification that group together circumstances to generate security alerts, which consequently trigger incident prevention mechanisms of the same nature.

The present research, when analyzing the 11 items of the checklist to develop a reporting system, presents support mechanisms in the identification of failures and 100% of objectives related to lessons learned.

In addition, the systems declare themselves to be voluntary, the disclosure is mostly through individual reports and notifications in the system are largely carried out by health professionals. Thus, the concern with the confidential and confidential disclosure of the notification, from the perspective of health incidents, reveals the importance of learning from adverse events and discussing improvements in organizations

Other studies facilitate the accessibility of reports, providing education on the typology of incidents they must report and reassuring notifiers that the administration of this event is independent, secure and anonymous, in no case intended to be the incentive to blame professionals. of health. These systems exist only for the detection and analysis of adverse events, for the understanding of the omission of the health system and for the mapping of policies for the prevention and reduction of these incidents. [27,24].

So, in this study, a project was carried out with the initiative to improve the safety culture within the chiropractic profession in the UK. The system works through the

use of passwords, so that professionals are not afraid to share their experiences, since they cannot be identified institutionally, in addition to proactively systematizing drop-down lists and option buttons that help in the simple and fast filling of the form, in sharing information and interacting in managing risk more effectivel[27].

About the risk expert analysis in structuring the data, this is an essential part. In this study on the electronic system of adverse events, four participants work in a private practice and three work in chiropractic institutions, in a collaborative way, discussing the domain of applicability, the potential and the costs of the application of preventive barriers, as well as minimum criteria of audit of incident analysis. The professionals then decided to elaborate a structured and rigorous development methodology [27].

In this other example of a learning system implementation study, in the health region of Calgary, Canada, positive results were shown, with a 200% increase in reports improving the percentage of perception of the notifier's feedback, through the ease of minimal screens for users to fill in, with a minimal amount of information needed; completely voluntary and confidential, with investment in security learning analysis as an important success factor [26].

In this study, which surveyed 1,931 adverse event reports on average devices in India, the result supports easy-to-use reporting guidelines and the application of regular training in order to develop a sense of responsibility so that notifiers can be confident that , when reporting adverse events, will not have any legal implications for them, given the recognition of their constructive role [15].

Regarding the analysis approach and classification by event type and causality, this review study on patient safety reporting systems in Iran demonstrates that the development of standardized datasets is necessary, with an investigation of the cause root that identifies recovery factors, aims to strengthen organizational defenses, prevention capacity and favors lessons learned, considering them as elements of an ideal system. However, another highlight is about encouraging the family to report incidents and the dynamics of providing safety feedback, bulletins and alerts to users. [25].

Regarding the descriptions of categories that indicate the type of relationship, in terms of patient safety, and factors involving causality, the ontological need to develop and improve the International Model of Information for Patient Safety has resulted, adding restrictions to the categorical structure. On the other hand, also the need for an alignment to build a complete and standardized domain of the information model and its associated value sets, which will allow comparisons of incident reports to support the entire process, from incident identification to correction and prevention of actions and permanent control of patient safety [20].

About feedback, responses and thanks: according to the study of this learning system, composed of the European Guidelines for Chiropractic Incidents, every occurrence of an incident must trigger a central analysis to detect trends of potential problems in the provision of care; and the results of the analysis must then be shared, contributing to an improvement in the safety of patient care [27].

Regarding the aspects of disseminating and disseminating bulletins and newsletters about the similarities of events and the risk trend, this study shows a great weakness in the dissemination of bulletins that can be

readily available to share and learn from the AHRQ, in addition to a great concern with the reliable data and its low quality. Data effectiveness is largely affected by the data entry process of unsafe clinical practices. A critical factor in the determination is the use of the data in the future, due to incomplete data, poor descriptions of incidents, as well as missing vital information, poor reporting, insufficient reporting and error-free disclosure, which could adversely affect the outcome. [18].

Besides, be careful with the legal consequences. On the other hand, there is a strong recommendation from the perception of relevance and purpose of the improvement aimed at training team members to improve the condition of the reports. [18,13].

The subjective views of healthcare professionals provide important additional information about location and patient safety. A widely used method is the Safety Attitudes Questionnaire, which measures staff attitudes in six areas related to patient safety and provides an instant assessment of the safety climate [14]. On the other hand, the concept of value in health requires measures that include reporting from patients and family members willing to contribute their opinions on adverse outcomes, and must be overcome. [14].

The reporting system is the basis for education and organizational learning innovation, safe care practices are disseminated as efforts are made to reduce the likelihood of recurrence of failures and deviations, as well as increase the capacity to disseminate and recommend improvements for patient safety systems.

LIMITATIONS OF THE STUDY

A limitation of this research is related to evaluating studies that bring computerized systems that deal with adverse events related to patient safety, not considering the characteristics of other systems, such as adverse reactions to vaccines or drug traceability.

CONTRIBUTIONS TO THE NURSING AND HEALTH AREA

We believe that a future study based on these findings is possible, in a line of investigation with an emphasis on advances in artificial intelligence, triggered by the creation of an interface module that causes previously parameterized electronic triggers and that can make the detection method viable. adverse incidents by optics.

REFERENCES

1. Sousa P, Mendes W. Segurança do Paciente: criando organizações de saúde seguras. [Internet] 2a ed Rio de Janeiro: 2019[cited em 2020 Aug16].p. 268 rev. updt. CDEAD, ENSP, Editora Fiocruz: Available from: http://books.scielo.org/id/bskw2/pdf/sousa-9788575416426.pdf.

2. Organização Mundial da Saúde. Relatório Técnico: Estrutura Conceitual da Classificação Internacional sobre Segurança do Doente. Lisboa; Direção Geral da Saúde de Portugal. Online [internet]. 2011 [cited em 2020 Aug 16]. Available from: https://proqualis.net/sites/proqualis.net/files/Estrutura%20Conceitual%20da%20Classifica%C3%A7%C3%A3o%20Int%20Seguran%C3%A7a%20do%20Paciente.pdf

3. World Health Organization. Minimal information model for patient safety incidente reporting and learning systems: user guide. World Health. Online[internet]. 2016 [cited 2021 Feb 01];50(5): 756-62. Available from: http://www.who.int/patientsafety/implementation/information_model/em/

4. World Health Organization. First Draft: Global Patient Safety Action Plan 2021–2030. Geneva: WHO Online [internet]. 2020 [cited Dec .10 2020]. Available from: https://www.who.int/teams/integrated-health-services/patient-safety/policy/global-patient-safety-action-plan

5. Baker GR. The Canadian Adverse Events Study: the incidence of adverse events among hospital patients in Canada. Canadian Medical Association Journal. Online[internet]. 2004 [cited 2020 Dec 10] 170(11), 1678–1686. Available from: https://www.cmaj.ca/content/170/11/1678?ct=

6. Organization patient safety incident reports - data workbooks, NHS Improvement; London Online[internet] September.2015[cited 2020 Dec 10] Available from: http://nrls.npsa.nhs.uk/patient-safety-data/organisation-patient-safety-incidentreports.

7. Dzau VJ, Shine KI. Two Decades Since To Err Is Human: Progress, but Still a "Chasm". JAMA. Online[internet].2020 [cited 2021 Feb 01];324(24):2489-90. Available from: https://jamanetwork.com/journals/jama/article-abstract/2774386?utm_campaign=articlePDF&utm_medium=articlePDFlink&utm_source=articlePDF&utm_content=jama.2020.1739. doi: 10.1001/jama.2020.23151

8. Noble DJ, Pronovost PJ. Underreporting of Patient Safety Incidents Reduces Health Care's Ability to Quantify and Accurately Measure Harm Reduction. Journal of Patient Safety. Online[internet].2018 [cited 2021 Feb 01];2010;6(4):247–50. Available from:https://journals.lww.com/journalpatifety/Abstract/2010/12000/Underreporting_of_Patient_Safety_Incidents_Reduces.10. doi: 10.1097/pts.0b013e3181fd1697

9. World Health Organization. World liance for patient safety: WHO draft guidelines for adverse event reporting and learning systems: from information to action. Available from: https://apps.who.int/iris/handle/10665/69797

10. Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, Straus SE. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Annals of Internal Medicine Online[internet].2018[cited 2020 Dec 10];169(7):467-73.Available from: https://www.acpjournals.org/doi/pdf/10.7326/M18-0850

11. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan-a web and mobile app for systematic reviews. Systematic Reviews. Online[internet].2016 [cited 2020 Dec 10];169(7):467-473. Available from: https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-016-0384-4#citeas

12. Carrocini RL, Bohomol E, Souza F, Carmo AC. Sistemas de notificações de incidentes de segurança do paciente: uma scoping review [Internet]. São Paulo: OSF [cited 2021 Feb 9]; 2021. Available from: osf.io/wxdj3

13. Ranaei A, Gorji HA, Aryankhesal A, Langarizadeh M. Implementation of adverse event reporting for medical devices. J Edu Health Promot [serial online] 2020 [citado em 6 de abril de 2021]; 9:272. Disponível em: https://www.jehp.net/text.asp?2020/9/1/272/29962

14. Wacker J. Measuring and monitoring perioperative patient safety: a basic approach for clinicians. Current Opinion in Anestesiology. 2020;33(6):815-22. https://journals.lww.com/co-anesthesiology/Fulltext/2020/12000/Measuring_and_monitoring_perioperative_patient.17.aspx

15. Shukla S, Gupta M, Pandit S, Thomson M, Shivhare A, Kalaiselvan V, Singh GN. Implementation of adverse event reporting for medical devices. Bull World Health Organ. 2020;98(3):206–11. https://dx.doi.org/10.2471%2FBLT.19.232785

16. Pettker C.M. Systematic approaches to adverse events in obstetrics. Seminars in Perinatology 2017;41 (3): 156-60. doi: 10.1053 / j.semperi.2017.03.004

17.StevenC, Sloane PD, Elder N, Cohen L, Laughtenschlaeger N, Walsh K, Zimmerman S. Reporting and Using Near-Miss Events toImprove Patient Safety in Diverse Primary Care Practices: A Collaborative Approach to Learning from Our Mistakes, 2016. https://pubmed.ncbi.nlm.nih.gov/26152435/

18. Pandit S, Gong Y. Event Reports Promoting Root Cause Analysis. Studies in Health Technology and Informatics , 2015;225:452-6. doi:10.3233/978-1-61499-658-3-452

19. Reed TL, Levy D, Steen LT, Roach J, Taylor T, Call K, Marion J, Drozda JP. Adverse event Triggered Event Reporting for Devices: Report of a Food and Drug, 2016. Doi: 10.1097/JCE.0000000000000151

20. Souvignet, J.; Rodrigues, J. M. Toward a patient safety upper level ontology Stud Health Technol Inform. 2015; 210: 160-4.,2015 https://ebooks.iospress.nl/doi/10.3233/978-1-61499-512-8-160

21. Safe use of health information technology, JCI. A complimentary publication of The Joint Commission Issue 54, March 31, 2015. https://drive.google.com/file/d/14eBsij6PSpH_UDuz7OY2MBsr3liriEHy/view

22. Liang C, Gong Y. On Building an Ontological Knowledge Base for Managing Patient Safety Event. Stud Health Technol Inform. . 2015; 216: 202-6. https://pubmed.ncbi.nlm.nih.gov/26262039/

23. Deraniyagala R, Liu C, Mittauer K, Greenwalt J, Morris CG, Yeung AR. Implementing an Electronic Event-Re+porting Systemin a Radiation Oncology Department: The Effect on Safety Culture and Near-Miss Prevention, 2015.

24. Riga M, Vozikis A, Pollalis Y, Souliotis K. MERIS (Medical Error Reporting Information System) as an innovative patient safety intervention: A health policy perspective, 2014

25. Sheikhtaheri A, Sadoughi, F, Ahmadi M, Moghaddasi H. A framework of a patient safety information system for Iranian hospitals: lessons learned from Australia, England and the US. Int J Med Inform. . Maio de 2013; 82 (5): 335-44. https://pubmed.ncbi.nlm.nih.gov/22770577/.

26. Flemons WW, McRae G. Reporting, learning and the culture of safety. Healthcare Quarterly 15 (edição especial) abril de 2012 : 12-17. https://pubmed.ncbi.nlm.nih.gov/22874441/

27. Wangler M, Fujikawa R, Hestbæk L, Michielsen T, Raven TJ,Thiel HW, Zaugg B. Creating European guidelines for Chiropractic Incident Reporting and Learning Systems (CIRLS): Relevance and structur. https://chiromt.biomedcentral.com/articles/10.1186/2045-709X-19-9

28. Rodrigues S, Brandão P, Nelas L, Neves J, Alves V. A logic programming approach to medical errors in imaging. Int J Med Inform. Set 2011;80(9): 669-79. doi: 10.1016 / j.ijmedinf.2011.06.005. Epub 2011, 23 de julho.

29. Jennings PA, Stella J. Barriers to incident notification in a regional prehospital setting. Emerg Med J 2011;28:526e529. doi:10.1136/emj.2010.090738

30. Clancy CM. Common formats allow uniform collection and reporting of patient safety data by patient safety organizations, AMERICAN JOURNAL OF medical quality. 2009;25(1):73-5. https://doi.org/10.1177/1062860609352438

31. González-Formoso C, Martín-Miguel MV, Fernández-Domínguez MJ, Rial A, Lago-Deibe F, Isidro Ramil-Hermida L, Pérez-García M, Clavería A. Journal: BMC Family Practice - Volume 12, Edição 1, pp. 50-59 - publicado em 01-01-2011

32. Visser A, Slaman AE, van Leijen CM, Gouma DJ, Goslings JC, Ubbink, DT Ferramenta de gatilho versus inventário verbal para detectar complicações cirúrgicas. Langenbeck's Archives of Surgery, 2015;400(7):821–30. doi: 10.1007 / s00423-015-1337-4

33. Dolores Menéndez M, Rancaño I, García V, Vallina C, Herranz V, Vázquez F. Usando Diferentes Sistemas de Notificação de Eventos Adversos: Muito Barulho por Nada? Revista de Calidad Asistencial, 2010;25(4):232–6. doi: 10.1016 / j.cali.2010.02.001

34. Munting KE, van Zaane B, Schouten ANJ et al. Relatando incidentes críticos em um hospital terciário: um estudo de coorte histórica de 110.310 procedimentos. Can J Anesth / J Can Anesth. 2015;62:1248–58 https://doi.org/10.1007/s12630-015-0492-y

35. Mira JJ, Cho M, Montserrat D, Rodríguez J, Santacruz J. Elementos clave en la implantación de sistemas de notificación de eventos adversos hospitalarios en América Latina. Rev Panam Salud Publica. 2013;33(1):1-7.

36. International Journal of Advanced Engineering Research and Science. Jaipur. Vol. 7, no. 2, (Feb. 2020), p. 172-176)

37. Araujo MM, Silva CG. A importância do sistema de informação de agravos de notificação - SINAN para a vigilância epidemiológica do Piauí. Rev Interdisciplin Cienc Saude [Internet]. 2015 [citado 2020 Dec 10]; 2(3):25-9.

38. Zugno RM, Cesaro BC, Oliveira PAB, Bordin R. Patient Safety: Adverse events notified in the Southern Region of Brazil, 2014-2019. Int J Adv Eng Res Science. 2020; 7(2):172-6. doi: https://dx.doi.org/10.22161/ijaers.72.24.