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INFLUENCES ON INCIDENT REPORTING IN A HOSPITAL SETTING: AN ANALYSIS OF THE MAIN FACTORS

INFLUÊNCIAS NA NOTIFICAÇÃO DE INCIDENTES EM AMBIENTE HOSPITALAR: UMA ANÁLISE DOS PRINCIPAIS FATORES

INFLUENCIAS EN LA NOTIFICACIÓN DE INCIDENTES EN UN ENTORNO HOSPITALARIO: UN ANÁLISIS DE LOS PRINCIPALES FACTORES

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ABSTRACT

Introduction: Risk management is a key tool to ensure patient safety and one of its main cornerstones is the notification systems. Despite this, under-notification remains a reality that threatens such systems.

Objective: To identify the factors that influence the safety incident notification process in an inpatient setting.

Methods: This research was developed by two reviewers separately and was divided into three distinct moments. Using Medline's scientific database (PubMed), the articles whose title and abstract were most relevant to the study objective were considered. Next, articles that met the following inclusion criteria were considered: studies written in Portuguese or English, with data on the adult population in the hospital environment, whose abstracts contained previously defined descriptors or terms with equivalent meanings and published after the report To Err is Human (2000), which is a global landmark in patient safety and from which notification systems were implemented globally. Finally, the reviewers analysed the articles in their entirety, and only those that agreed with both were considered.

Results: Feedback after notification (38.46%), non-punitive culture (38.46%), leadership (30.77%), organizational factors (30.77%), simplicity of the notification process (69.23%), knowledge/competence (58.84%) and an adequate work environment (30.77%) were the main 7 factors identified.

Conclusion: By identifying the main factors that improve incident notification in hospitals (quantitative and qualitatively), we strengthen the characteristics of an optimal incident report system (confidential, non-punitive, independent, with data and timely data analysis by experts, oriented to changes in systems and processes). This arises as a way to reach full potential of the notification process towards better patient safety.

Keywords: Healthcare Risk Management; Hospital Incident Reporting; Patient Safety Incident Report; Voluntary Patient Safety Report.

RESUMO

Introdução: A gestão do risco constitui um instrumento fundamental para garantir a segurança do doente e um dos seus principais pilares são os sistemas de notificação de incidentes. Porém a subnotificação ameaça a utilidade destes sistemas.

Objetivo: Identificar os fatores que influenciam o processo da notificação de incidentes de segurança do doente em contexto hospitalar.

Métodos: A pesquisa foi efetuada por dois revisores separadamente e dividiu-se em três momentos distintos. Com recurso à base de dados científica da Medline (PubMed), foram considerados os artigos cujo título e resumo fossem mais relevantes para o objetivo em estudo. De seguida, foram considerados os artigos que respeitassem os seguintes critérios de inclusão: estudos escritos em língua portuguesa ou inglesa, com dados sobre população adulta em âmbito hospitalar, cujos resumos continham os descritores previamente definidos ou termos com significados equivalentes e publicados após o relatório *To Err is Human* (2000), sendo este um marco mundial da segurança do doente e a partir do qual se implementou globalmente os sistemas de notificação. Por fim, os revisores analisaram integralmente os artigos, sendo considerados apenas os que se encontravam em concordância pelos dois.

Resultados: O *feedback* após a notificação (38,46%), uma cultura não-punitiva (38,46%), a liderança (30,77%), fatores organizacionais (30,77%), simplicidade do processo de notificação (69,23%), conhecimento/competências (58,85%) e um ambiente laboral adequado (30,77%), foram os 7 principais fatores identificados.

Conclusão: Ao identificarmos os principais aspetos que melhoram a taxa de notificação de incidentes nos hospitais (em quantidade e qualidade), reforçamos as características de um bom sistema de notificação de incidentes (confidencial, não-punitivo, independente, com dados e análises de peritos da área disponíveis em tempo útil e orientado para mudanças nos sistemas e nos processos), como forma de alcançar o seu potencial na segurança do doente.

Palavras-chave: Gestão de Risco de Saúde; Notificação de Incidentes Hospitalares; Notificação de Incidentes de Segurança do Doente; Notificação Voluntária de Incidentes de Segurança.

RESUMEN

Introducción: La gestión de riesgos es una herramienta clave para garantizar la seguridad del paciente y uno de sus principales pilares son los sistemas de notificación de incidentes. Pero el subregistro amenaza la utilidad de estos sistemas.

Objetivo: Identificar los factores que influyen en el proceso de reporte de incidentes de seguridad del paciente en el contexto hospitalario.

Métodos: La investigación fue realizada por dos revisores por separado y se dividió en tres momentos distintos. Utilizando la base de datos científica de Medline (PubMed), se consideraron los artículos cuyo título y resumen eran más relevantes para el objetivo del estudio.

Resultados: Retroalimentación después de la notificación (38,46%), una cultura no punitiva (38,46%), liderazgo (30,77%), factores organizacionales (30,77%), simplicidad del proceso de notificación (69,23%), conocimientos/habilidades (58,85%) y un ambiente de trabajo adecuado (30,77%), fueron los 7 principales factores identificados. A continuación, se consideraron los artículos que cumplieran con los siguientes criterios de inclusión: estudios escritos en portugués o inglés, con datos sobre la población adulta en el ambiente hospitalario, cuyos resúmenes contuvieran descriptores o términos previamente definidos con significados equivalentes y publicados después del informe To Err is Human (2000), que es un hito mundial en la seguridad del paciente y a partir del cual se implementaron globalmente sistemas de notificación. Finalmente, los revisores analizaron los artículos en su totalidad, y solo se consideraron aquellos que estaban de acuerdo con ambos.

Conclusión: Al identificar los principales aspectos que mejoran la tasa de reporte de incidentes en los hospitales (en cantidad y calidad), reforzamos las características de un buen sistema de reporte de incidentes (confidencial, no punitivo, independiente, con datos y análisis de expertos en el área disponibles de manera oportuna y orientados a cambios en sistemas y procesos), como una forma de lograr su potencial en la seguridad del paciente.

Descriptores: Gestión de Riesgos para la Salud; Notificación de Incidentes Hospitalarios; Notificación de Incidentes de Seguridad del Paciente; Notificación Voluntaria de Incidentes de Seguridad.

INTRODUCTION

Risk is a circumstance that cuts across all periods and contexts of humanity, but its management is a relatively recent corporate exercise. Risk management is an essential practice in a hospital environment, where patient safety and quality of care are of utmost importance. Florence Nightingale demonstrated that the control of aspects that put their patients at risk, such as sanitary and hygienic conditions, resulted in a decrease in their mortality[1]; and at the beginning of the twentieth century, Ernest Codman and Edward Martin created the American College of Surgeons and a follow-up system, where by tracking patients, useful data could be collected for evaluation and benchmarking between hospitals, and used as a form of collective learning and improvement of the care provided[2]. The concept of risk can be defined as the assessment of the probability of the occurrence of a given hazard and the extent of its consequences[3]. At every stage of the care process there is a considerable amount of risk. Eliminating and minimizing events that may cause harm to the patient should be an organic process in the multidisciplinary team during the planning and provision of daily care[3,4,5].

Incident identification and reporting play a crucial role in risk management, enabling harms prevention and continuous learning. This article aims to investigate the factors that influence the practice of incident reporting in a hospital environment, with the aim of contributing to the understanding of patient safety and risk management.

Risk management is a critical tool to ensure patient safety, being the incident reporting systems one of the main pillars[3,6]. Through incident analysis, hospitals can identify areas of risk, put in place preventive measures, and share knowledge with the multidisciplinary team. However, despite their importance, research shows that many incidents aren't reported[7], which can distort the true scale of the threats to a safe environment in hospital care.

There are no perfect reporting and analysis systems, but successful reporting systems are known to be based on two fundamental principles: highlighting the existence of certain risks and preventing harm[8]. Thus, knowing the importance that incident reporting plays in patient safety, it is crucial to identify the factors that influence the practice of incident reporting.

Throughout this article, we will examine in detail the factors that most influence the practice of incident reporting in an inpatient environment. We will explore how organizational culture, healthcare professionals' perception, and the approach to accountability affect the decision to report incidents. In addition, we will discuss the relationship between incident reporting and risk management, highlighting the importance of effective reporting systems in promoting patient safety.

In the next section, we will present the methodology adopted for this research, describing how we identified and analyzed the influencing factors. Subsequently, we will share the results obtained and, finally, discuss the implications of these findings for clinical practice and hospital management.

METHODOLOGY

Research Strategy

We developed a systematic analysis of the literature to determine which factors influence the reporting of patient safety incidents, of an adult population, in a hospital environment. Using the design methodology of the Joanna Briggs Institute (JBI)[9] and based on the model Problem, Intervention, Comparison, Outcome (PICO)[10], the question was established "What factors influence (Problem) the notification of incidents (Intervention/Comparison) on patient safety (Outcome) in a hospital context?".

Using Medline's scientific database (PubMed) and using the words MeSH Hospital "Incident Reporting" OR "Voluntary Patient Safety Report" OR "Patient safety incident report" OR "Healthcare risk management", a research was carried out between January 20 and February 9, 2023.

Data Extraction

Two reviewers independently analyzed the title and abstract of all articles listed in the database, allowing the selection of the most relevant ones for the purpose of the study. The inclusion criteria considered all studies written in Portuguese or English, focusing on an adult population in a hospital environment, whose abstracts contained the previously defined descriptors or terms with equivalent meanings. Only the articles published after the publication of the report To Err is Human (2000) were considered. This report is view as a global framework for patient safety and from which the notification systems were globally implemented and, consequently, the publication of evidence on this topic.

All articles whose typology was an editorial or letters to the editor were excluded.

The full text of all selected articles has been extracted. From there, the two reviewers did a blind review of the studies, following the previously defined inclusion criteria, in order to obtain a final list of articles for analysis.

A total of 45 articles were analyzed (Figure 1↗). Three of these were excluded due to the absence of descriptors in the abstract, ten were excluded after analysis of the abstract, three were excluded due to the typology of the article, and six because it was a population or context not covered by the inclusion criteria. At the end of this phase, 23 articles were fully analyzed. Of these, ten were excluded because there was no agreement among the reviewers on the identification of the factors that influence the reporting of incidents.

Methodological quality assessment

For a better understanding of the evidence chosen (13 articles), the JBI methodology[11] was used. The articles were classified according to their level of evidence (Chart 1↗), in order to identify the quality and reliability of the bibliographic research. Finally, to conclude the evaluation of the articles, methodological quality was assessed through the degrees of recommendation according to the FAME method – Feasibility, Appropriateness, Meaningfulness and Effectiveness (Table 1↗)[12], used in the JBI evidence-based care model. According to this method, the evidence can have a methodological quality recommendation grade of A (high) or B (low), after integrating the dimensions of feasibility, appropriateness, meaningfulness and effectiveness.

Despite the wide diversity of studies, the contents presented were relevant to answer the research question, as evidenced in the evaluation of methodological quality according to the FAME method, a methodological quality considered high (A) in all studies, opting for its inclusion.

Extraction and synthesis of results

All quantitative and qualitative data extracted from the articles included in the review were systematized (Chart 2↗), to help answer the research question.

RESULTS

The final sample of this review consisted of 13 scientific articles, selected by the previously established inclusion criteria, and submitted to the validation criteria mentioned above. Chart 2↗ represents the specifications of each of the articles analyzed, to simplify the interpretation of the information and its results.

DISCUSSION

The overall objective of this study was to recognize what factors could influence the reporting of patient safety incidents in hospitals. The incident notification system is a dynamic process capable of providing important information and data to improve quality and safety during the provision of healthcare[3]. However, when the process becomes lengthy and complicated, the level of compliance of professionals with notification decreases substantially. Thus, the factor with the highest expression in the articles analyzed was the notification systems and processes (69.23%)[13-17,19,21,23,24]. The notification process should be intuitive, confidential and/or anonymous, easily accessible to all healthcare professionals and free of bureaucracy[8]. The importance of the characteristics of the notification system is related to another factor identified in the articles: work overload (30.77%)[13,18,21,22]. The lack of time to report due to work overload and the perception of reporting as an additional burden, often bounds professionals from reporting security incidents[13,18,21,22]. Systems should be intuitive to use, preferably in digital formats, to ensure fast and effective communication, and to generate useful information for the identification of new sources of risk, creating opportunities to reduce them[8].

The second most identified factor in the articles was the lack of knowledge and skills about patient safety (53.85%) of healthcare professionals[13-16,19-21].The lack of knowledge to recognize safety incidents or the benefit of notifying them[14,19,20] and the lack of training in submitting reports[13,14,21] is translated into underreporting, with an impact on patient safety[21]. It is important to empower, motivate and train healthcare professionals to identify and report safety incidents or situations that generate potential risks[8]. The first step in learning through notification will be through the experience of notifying and the information that will result from it[26]. The creation of continuous improvement programs, training, and qualification of health professionals in the area of patient safety, as well as the implementation of effective feedback systems, with the ability to provide information on preventive measures in a timely manner, may be the strategies to motivate professionals to report more incidents. The promotion of knowledge and skills may be a challenge for leadership[8]. Leadership, organizational structure and safety culture (30.77%) had the same representativeness in the articles analyzed[14-18,21,22,25]. On the one hand, support and appreciation from leadership and managers[15,16,21,25] and on the other hand, a robust organizational structure[14,17,18,22] that trusts its professionals and promotes a culture of institutional, fair and blame-free safety, emerge as the most widely cited factors that positively or negatively influence incident reporting systems in all sectors, not only in health care[8]. Incident reporting is considered as the foundation for safer care practice and a development measure to

achieve a good organizational safety culture, which values learning through error. High-reliability systems, such as health institutions, should carry out their activity with transparency, openness and a culture of non-blame[3]. In the articles analyzed, the fear of notifying or of the consequences of such notification (38.46%) is also pointed out as a factor that conditions healthcare professionals' notification[13,14,17,24,25]. In addition, the third most identified factor in the articles was the importance of notification feedback (38.46%). The lack of feedback to professionals directly contributes to underreporting, discouraging them from making notifications because they do not perceive a direct benefit in their reporting action or receive suggestions for improvement[14-16,19,21]. A feedback-loop to professionals, which results from the analysis of experts and patient safety managers, is essential to take preventive measures and to implement systematic measures to reduce risks for all stakeholders during the provision of health care[3]. It will be important to highlight the importance of a multidisciplinary and collaborative approach, both in the process of identifying and reporting incidents, and in their analysis, understanding and subsequent dissemination of information. This enrichment of reporting systems and the quality of analysis will contribute to the sustained development of the area of patient safety and an overall safer provision of care.

FINAL THOUGHTS AND RECOMMENDATIONS

This review allowed to underline which are the main factors that influence the frequency and quality of the notification of patient safety incidents in a hospital context, carried out by health professionals: feedback after notification (38.46%); the existence of a non-punitive culture (38.46%); patient safety-oriented leadership (30.77%); a simple and fast notification process (69.23%); knowledge and skills on patient safety (53.85%); an organizational structure that believes in and promotes incident reporting (30.77%); promoting a culture of safety among health professionals, and finally, a good work environment (30.77%).

The recognition of the factors identified as capable of improving the incident reporting rate in hospitals (both in quantity and quality), reinforces the importance of valuing the characteristics of a good incident reporting system (confidential, non-punitive, independent, with data and analysis from experts in the field available in a timely manner and oriented to changes in systems and processes), as a way to achieve its potential in patient safety.

The main limitation of this study is the time constraint and some weakness in the published research on the factors that condition the notification of incidents. We recommend a greater investment in research in the area of patient safety incident reporting. Either through the perception of the impact of specific interventions and strategies on voluntary reporting, by benchmarking between national health institutions, or by analyzing how cultural factors can influence reporting in different contexts.

REFERENCES

1. Kudzma EC. Florence Nightingale and healthcare reform. Nurs Sci Q. 2006;19(1):61-64. Available from: https://doi.org/10.1177/0894318405283556.

2. Dervishaj O, Wright KE, Saber AA, Pappas PJ. Ernest Amory Codman and the End-result System. Am Surg. 2015;81(1):12-15. Available from: https://doi.org/10.1177/000313481508100109.

3. World Health Organization. Global Patient Safety Action Plan 2021–2030: towards eliminating avoidable harm in health care. [Internet]. Geneva: World Health Organization; 2021. [accessed 2023 Feb 10]. Available from: https://www.who.int/publications/i/item/9789240032705.

4. National Patient Safety Agency. Healthcare Risk Assessment Made Easy (mar 2007). [Internet]. London: National Health Service; 2007; [accessed 2023 Feb 10]. Available from: http://www.mtpinnacle.com/pdfs/Healthcare_Risk_Assess.pdf.

5. Scrivens E. Quality Risk and Control in Health Care. Maidenhead; New York, NY: Open University Press; 2005.

6. Direção-Geral da Saúde. Plano Nacional de Saúde 2012-2016 Versão Resumo (Maio 2013). [Internet]. Lisboa: Direção-Geral da Saúde. [accessed 2023 Feb 10]. Available from: https://pns.dgs.pt/files/2013/05/PNS2012_2016_versaoresumo_maio20133.pdf.

7. Bellis JR, Chen Y, Moorthy VS, et al. Sensitivity of routine system for reporting patient safety incidents in an NHS hospital: retrospective patient case note review. BMJ. 2007;334(7584):79-82. Available from: https://doi.org/10.1136/bmj.39031.507153.AE.

8. World Health Organization. Patient safety incident reporting and learning systems: technical report and guidance. [Internet]. Geneva: World Health Organization; 2020. [accessed 2023 Feb 10]. Available from: https://www.who.int/publications/i/item/9789240010338.

9. Joanna Briggs Institute. Checklist for Systematic Reviews and Research Syntheses. [Internet]. Adelaide: Joanna Briggs Institute; [accessed 2023 Feb 1]. Available from: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fjbi.global%2Fsites%2Fdefault%2Ffiles%2F2021-10%2FChecklist_for_Systematic_Reviews_and_Research_Syntheses.docx&wdOrigin=BROWSELINK.

10. Joanna Briggs Institute. Manual for Evidence Synthesis. [Internet]. Adelaide: Joanna Briggs Institute; [accessed 2023 Feb 1]. Available from: https://jbi-global-wiki.refined.site/space/MANUAL/4688141/2.6.2+Review+question.

11. Joanna Briggs Institute. Developed by the Joanna Briggs Institute Levels of Evidence and Grades of Recommendation Working Party October 2013. [Internet]. Adelaide: Joanna Briggs Institute; 2013. [accessed 2023 Feb 10]. Available from: https://jbi.global/sites/default/files/2019-05/JBI-Levels-of-evidence_2014_0.pdf.

12. Joanna Briggs Institute. Developed by the Joanna Briggs Institute Levels of Evidence and Grades of Recommendation Working Party October 2013. [Internet]. Adelaide: Joanna Briggs Institute; 2013. [accessed 2023 Feb 10]. Available from: https://jbi.global/sites/default/files/2019-05/JBI-grades-of-recommendation_2014.pdf.

13. Alves MFT, Carvalho DS, Albuquerque GSC. Barriers to patient safety incident reporting by Brazilian health professionals: an integrative review. Motivos para a não notificação de incidentes de segurança do paciente por profissionais de saúde: revisão integrativa. Cien Saude Colet. 2019;24(8):2895-2908. Available from: https://doi.org/10.1590/1413-81232018248.23912017.

14. Yalew ZM, Yitayew YA. Clinical incident reporting behaviors and associated factors among health professionals in Dessie comprehensive specialized hospital, Amhara Region, Ethiopia: a mixed method study. BMC Health Serv Res. 2021;21(1):1331. Available from: https://doi.org/10.1186/s12913-021-07350-y.

15. Ngo J, Lau D, Ploquin J, Receveur T, Stassen K, Del Castilho C. Improving incident reporting among physicians at south health campus hospital. BMJ Open Qual. 2022;11(4): e001945. Available from: https://doi.org/10.1136/bmjoq-2022-001945.

16. Burlison JD, Quillivan RR, Kath LM, et al. A Multilevel Analysis of U.S. Hospital Patient Safety Culture Relationships With Perceptions of Voluntary Event Reporting. J Patient Saf. 2020;16(3):187-193. Available from: https://doi.org/10.1097/PTS.0000000000000336.

17. Archer S, Hull L, Soukup T, et al. Development of a theoretical framework of factors affecting patient safety incident reporting: a theoretical review of the literature. BMJ Open. 2017;7(12): e017155. Available from: https://doi.org/10.1136/bmjopen-2017-017155.

18. Alzahrani N, Jones R, Abdel-Latif ME. Attitudes of doctors and nurses toward patient safety within emergency departments of two Saudi Arabian hospitals. BMC Health Serv Res. 2018;18(1):736. Available from: https://doi.org/10.1186/s12913-018-3542-7.

19. Evans SM, Berry JG, Smith BJ, et al. Attitudes and barriers to incident reporting: a collaborative hospital study. Qual Saf Health Care. 2006;15(1):39-43. Available from: https://doi.org/10.1136/qshc.2004.012559.

20. Waring JJ. A qualitative study of the intra-hospital variations in incident reporting. Int J Qual Health Care. 2004;16(5):347-352. Available from: https://doi.org/10.1093/intqhc/mzh068.

21. Dhamanti I, Leggat S, Barraclough S, Rachman T. Factors contributing to under-reporting of patient safety incidents in Indonesia: leaders' perspectives. F1000Res. 2021; 10:367. Published 2021 May 10. Available from: https://doi.org/10.12688/f1000research.51912.2.

22. Chiang HY, Lee HF, Lin SY, Ma SC. Factors contributing to voluntariness of incident reporting among hospital nurses. J Nurs Manag. 2019;27(4):806-814. Available from: https://doi.org/10.1111/jonm.12744.

23. Mitchell I, Schuster A, Smith K, Pronovost P, Wu A. Patient safety incident reporting: a qualitative study of thoughts and perceptions of experts 15 years after "To Err is Human". BMJ Qual Saf. 2016;25(2):92-99. Available from: https://doi.org/10.1136/bmjqs-2015-004405.

24. Reznek MA, Barton BA. Improved incident reporting following the implementation of a standardized emergency department peer review process. Int J Qual Health Care. 2014;26(3):278-286. Available from: https://doi.org/10.1093/intqhc/mzu045.

25. Woo MWJ, Avery MJ. Nurses' experiences in voluntary error reporting: An integrative literature review. Int J Nurs Sci. 2021;8(4):453-469. Published 2021 Aug 2. Available from: https://doi.org/10.1016/j.ijnss.2021.07.004.

26. Stemn E, Bofinger C, Cliff D, Hassall ME. Failure to learn from safety incidents: Status, challenges and opportunities. Safety science. 2018 Jan 1; 101:313-25.

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Authors' contributions/Contributos dos autores
AO: Study coordination, study design, collection, storage and analysis review and discussion of results.
DG: Study design, data analysis, review and discussion of results.
MC: Study design, data analysis, review and discussion of results.
All authors have read and agreed with the published version of the manuscript.

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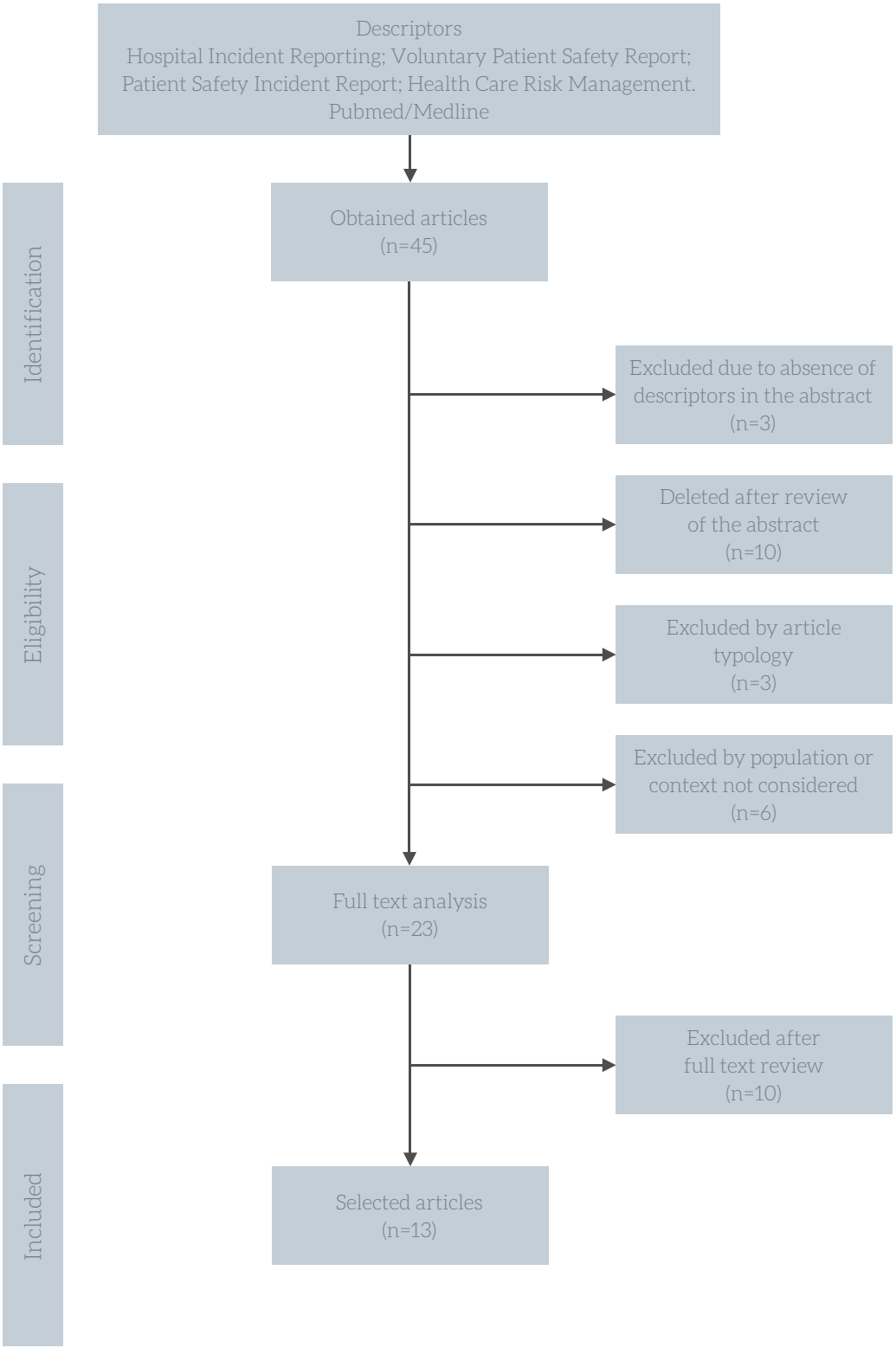

Figure 1 – PRISMA scheme summarizing the methodology for the inclusion of articles.

Chart 1 – List of Articles, Authors, JBI Level of Evidence[14] and Type of Study.

Article		Author/Date	Level of Evidence	Type of Study
A1[13]	Barriers to patient safety incident reporting by Brazilian health professionals: an integrative review	Michelle de Fátima Tavares Alves, Denise Siqueira de Carvalho, Guilherme Souza Cavalcanti de Albuquerque (2019)	5b	Review of qualitative (expert opinion) and quantitative studies
A2[14]	Clinical incident reporting behaviors and associated factors among health professionals in Dessie comprehensive specialized hospital, Amhara Region, Ethiopia: a mixed method study	Zemen Mengesha Yalew and Yibeltal Asmamaw Yitayew (2021)	3a	Cross-sectional analytical, mixed, cohort comparison study
A3[15]	Improving incident reporting among physicians at south health campus hospital	Jennifer Ngo, Darren Lau, Jodi Ploquin, Tracey Receveur, Kobus Stassen, Colin Del Castilho (2022)	4a	Systematic review of descriptive studies
A4[16]	A Multilevel Analysis of U.S. Hospital Patient Safety Culture Relationships with Perceptions of Voluntary Event Reporting	Jonathan D. Burlison, Rebecca R. Quillivan, Lisa M. Kath, Yinmei Zhou, Sam C. Courtney, Cheng Cheng, James M. Hoffman (2020)	4b	Cross-sectional study
A5[17]	Development of a theoretical framework of factors affecting patient safety incident reporting: a theoretical review of the literature	Stephanie Archer, Louise Hull, Tayana Soukup, Erik Mayer, Thanos Athanasiou, Nick Sevdalis, Ara Darzi (2017)	5a	Systematic review of qualitative studies
A6[18]	Attitudes of doctors and nurses toward patient safety within emergency departments of two Saudi Arabian hospitals	Naif Alzahrani, Russell Jones, Mohamed E. Abdel-Latif (2018)	4b	Cross-sectional study
A7[19]	Attitudes and barriers to incident reporting: a collaborative hospital study	S M Evans, J G Berry, B J Smith, A Esterman, P Selim, J O'Shaughnessy, M DeWit (2006)	4b	Cross-sectional study
A8[20]	A qualitative study of the intra-hospital variations in incident reporting	Justin J Waring (2004)	4b	Cross-sectional study
A9[21]	Factors contributing to under-reporting of patient safety incidents in Indonesia: leaders' perspectives	Inge Dhamanti, Sandra Leggat, Simon Barraclough, Taufik Rachman (2021)	5b	Expert Interview
A10[22]	Factors contributing to voluntariness of incident reporting among hospital nurses	Hui-Ying Chiang, Huan-Fang Lee, Shu-Yuan Lin, Shu-Ching Ma (2019)	4b	Cross-sectional study
A11[23]	Patient safety reporting: a qualitative study of thoughts and perceptions of experts 15 years after 'To Err is Human'	Imogen Mitchell, Anne Schuster, Katherine Smith, Peter Pronovost, Albert Wu (2016)	5b	Expert Interview

Chart 1 – List of Articles, Authors, JBI Level of Evidence[14] and Type of Study.

Article		Author/Date	Level of Evidence	Type of Study
A12[24]	Improved incident reporting following the implementation of a standardized emergency department peer review process	Martin A Reznek, Bruce A Barton (2014)	4b	Cross-sectional study
A13[25]	Nurses' experiences in voluntary error reporting: An integrative literature review	Ming Wei Jeffrey Woo, Mark James Avery (2022)	5b	Review of qualitative studies

Table 1 – JBI FAME Method Recommendation Grade[12].

Articles	Methodological Quality Assessment				
	Feasibility	Appropriateness	Meaningfulness	Effectiveness	Degree
A1	A	A	B	A	High
A2	A	A	A	A	High
A3	A	A	A	A	High
A4	A	A	B	A	High
A5	A	A	A	A	High
A6	A	A	A	A	High
A7	A	A	A	A	High
A8	A	A	B	A	High
A9	A	A	B	A	High
A10	A	A	A	A	High
A11	A	A	B	A	High
A12	A	A	A	A	High
A13	A	A	A	A	High

Chart 2 – Summary of Included Studies.

Article	Type of Study	Goal	Sample	Results	Conclusions
A1[13]	Integrative review.	To identify and analyze national studies on barriers to reporting safety incidents among health professionals in Brazil.	8 articles (5 qualitative and 3 quantitative).	In about 87.5% of the studies, the professionals reported the existence of underreporting, due to: • Fear of reporting Adverse Events (62.5%); • Reporting of less serious incidents or incidents without immediate consequences are less frequently reported by professionals (37.5%); • Lack of knowledge about patient safety – what, how and where to report (37.5%); • Hierarchy in the notification process (50%); • Work overload and lack of time (25%); • Culture of Punishment in Health Services (50%).	Fear is a major barrier. Promote a fair safety culture, focusing only on process failures rather than individual performance. Promote the knowledge of professionals about the main concepts about safety and how to report. Make the incident reporting process simpler and less bureaucratic. Broaden the area of patient safety to a multidisciplinary perspective.
A2[14]	Cross-sectional Mixed Study.	To assess the reporting behavior of clinical incidents in health care professionals in Ethiopia.	319 participants for the quantitative study and 18 participants for the qualitative study.	Professionals with training in reporting were 3.6 times more likely to report than professionals without such training. Professionals who perceived that incident reporting helped minimize errors were 2.8 times more likely to report than professionals who did not. 67.8% of the professionals that are afraid, don't report. 69.3% of professionals who feel a lack of feedback don't report. The results of the qualitative study were: • Lack of organizational structure; • Fear of consequences; • Lack of investigation into the cause of errors (lack of feedback).	This study showed that the overall reporting behavior of clinical incidents of healthcare professionals was very low. The main factors were related to lack of knowledge about the importance of reporting, or how to do it; as well as failures in feedback, organizational structure, and investigation of the source of the error.

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Article	Type of Study	Goal	Sample	Results	Conclusions
A3[15]	Cross-sectional study.	To discuss the reporting and learning system and seek feedback on why the reporting rates among physicians are low; Scrutiny of measures to increase physician submissions.	383 reports submitted by physicians in 4 years in a hospital (after implementation of *"Plan-Do-Study-Act"* cycles).	After the implementation of interventions, there was a sustained increase in notifications by physicians in the following 4 years (to 2.65%). Although smaller, there was also an increase in incident reports made by medical professionals in other health institutions in the city of Calgary (Alberta, Canada) – physicians who also worked in other health institutions. The multifaceted interventions that promoted clinician incident reporting were: • Feedback from direct leadership; • Effectiveness in the digital subscription of reports, for the learning group; • Secure disclosure.	Incident reports submitted by physicians can be sustainably increased if there is training on the reporting system and process, and if there is personalized feedback from a patient safety expert.
A4[16]	Cross-sectional study.	To assess the associations between the dimensions of patient safety culture and the perception of incident reporting practices with varying severities.	Data/responses from 223,412 individuals, from 7816 functional areas and 967 hospitals (*The Agency for Healthcare Research and Quality Hospital Survey of Patient Safety Culture*).	Lack of feedback on the error was the result with the highest correlation with low incident reporting (regardless of their severity). Punitive reactions to incident reporting also condition incident reporting. The magnitude of the impact of patient safety culture on reporting varies little with the perceived level of severity. On the other hand, in events that actually result in harm, there may be greater differences in notification between minor and severe harm.	Feedback on errors, organizational learning, and management support for safety are the most predictive dimensions of patient safety culture that are related to better safety incident reporting outcomes. To increase the frequency of reporting of security incidents, the study suggests prioritizing efforts to improve feedback on reports and communication of suggestions for improvements related to reported incidents. As well as support from top leadership.

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Article	Type of Study	Goal	Sample	Results	Conclusions
A5[17]	Systematic Review.	To identify factors that contribute to the reporting of security incidents.	110 articles.	Found 748 barriers to incident reporting. The three most frequently mentioned barriers were: • Fear of consequences (21.52%) – fear of adverse consequences when notifying (31.68%), fear of litigation processes (18.63%); • Notification process and system (14.71%) – time spent making a notification (26.36%), complexity of the notification process (25.45%), failure to anonymize and/or confidentiality (20%) and format of the notification (9.09%) and notification system (4.55%); • Characteristics of incidents (12.30%) – level of harm (43.48%), cause of incident (20.65%) and frequency of incident (19.57%). Other barriers: individual characteristics of health professionals (11.80%), lack of knowledge and skills in the area of safety (11.23%), work environment (10.70%), organizational factors (10.16%), team dynamics (4.41%) and professional ethics (3.07%). A total of 372 mediators were found. Organizational factors (26.08%) were the most frequently mentioned – communication or feedback after incident reporting (29.90%), a non-punitive incident reporting policy (22.68%), the existence of a reporting culture (16.49%) and a learning objective through reporting (13.40%) – followed by the reporting process and systems (20.16%) – reporting format (28%), ensuring anonymity and/or confidentiality (21.33%) and simplifying the process (20%) – and characteristics of incidents (14.78%) – ...	There is a wide range of factors that contribute to the involvement of professionals in incident reporting. Knowing the trend of underreporting, it is essential to know all the factors that influence reporting, to develop interventions, as well as a strategic approach to improve security and notification policy.

Chart 2 – Summary of Included Studies.

Article	Type of Study	Goal	Sample	Results	Conclusions
A5[17]	Systematic Review.	To identify factors that contribute to the reporting of security incidents.	110 articles.	... level of harm (47.27%) and frequency of incident (23.63%). Other facilitating factors: individual characteristics of professionals (11.02%), knowledge and skills on patient safety (9.68%), factors related to teamwork (5.38%), professional ethics (4.57%), work environment (4.84%) and fear of adverse consequences (3.49%).	There is a wide range of factors that contribute to the involvement of professionals in incident reporting. Knowing the trend of underreporting, it is essential to know all the factors that influence reporting, to develop interventions, as well as a strategic approach to improve security and notification policy.
A6[18]	Cross-sectional study.	To investigate the attitudes of physicians and nurses towards patient safety, through the SAQ questionnaire (Safety Attitudes Questionnaire) and the number of reports made, in the emergency department of two hospitals in Saudi Arabia.	503 physicians and nurses.	39.6% of participants reported at least one error in a year. There was a significant negative correlation between the number of reported errors and the working environment, satisfaction and working conditions. Nurses and physicians in the emergency department of two Saudi hospitals have a relatively low safety culture, which is correlated with the low number of reported incidents.	More research is needed in the Saudi context to identify the relationship between safety attitudes and hospital error rates earlier. Understand the cultural impact of staff on safety attitudes and test how safety training and management support can improve the safe performance of Saudi hospitals.

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Article	Type of Study	Goal	Sample	Results	Conclusions
A7[19]	Cross-sectional study.	To assess the awareness and use of the incident reporting system and to identify factors that inhibit such reporting in hospitals.	186 physicians and 587 nurses from various hospital settings in Australia.	58.4% of senior physicians completed an incident report form versus 85.4% of junior physicians. 100% of senior nurses know how to access the incident report form versus 88% of junior nurses. The biggest barriers to physicians' notification are lack of feedback (57.7%), time-consuming of the incident report form (54.2%), and the belief that certain types of incidents are trivial (51.2%). The biggest barriers to nurses' notification are: lack of feedback (61.8%), believing that there is no benefit in reporting near misses (49%) and forgetting, when there is work overload (48.1%).	Nurses report more than physicians. To promote incident reporting, especially to physicians, it is important to clarify which incidents should be reported, simplify the reporting process, and increase feedback to reporting professionals.
A8[20]	Cross-sectional study.	To determine the relationship between variations in incident reporting, the corresponding attitudes and participation of medical professionals.	25 physicians and 5 clinical risk and patient safety managers.	The information collected revealed a significant variation in the reporting of incidents in the different specialties. Reporting systems that are more tailored to the department/specialty end up being more sensitive to the area, and motivate clinicians to participate in more incident reports.	Physicians are more interested in reporting when there is confidence in the process, purpose in reporting, and reporting is an important contribution to the service.

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A9[21]	Expert Interview.	To analyze the factors responsible for the underreporting of incidents in public hospitals in Indonesia.	25 leaders from 9 institutions.	Factors influencing underreporting: • Hospital-related: failure to understand the benefits of reporting, lack of knowledge, reporting responsibility burden, lack of leadership, lack of reporting culture, notification as an additional burden. • Governmental: protection from punitive measures, absence of leadership, absence of feedback and discussion, fear about the confidentiality of the system, voluntary versus mandatory nature.	The biggest factor contributing to the underreporting of incidents in Indonesia is the lack of government support.
A10[22]	Cross-sectional study.	To test a hypothetical model for voluntary incident reporting by nurses and to determine the extent to which cultural reporting factors, safety of nursing practices and work perceptions influence incident reporting.	1380 nurses from 6 hospitals in Taiwan.	60% of nurses admit that they do not have a voluntary reporting attitude. Voluntary incident reporting is positively related to: • Notification culture; • Safe nursing practices; • Job satisfaction. And negatively with: • Work overload.	Safety culture and safe nursing practices are determinants in voluntary incident reporting systems.
A11[23]	Expert Interview.	To document the wisdom and reflections of international experts in the field of patient safety, about the opportunities and challenges of incident reporting.	17 guests, 11 accepted.	The 5 key factors explain why incident reporting systems have been unable to reach their full potential: • Inadequate processing of reports; • Low clinician engagement; • Insufficient action in response to reports made; • Inadequate funding and institutional support; • Divestment in the area of health information technology.	It is imperative that the reporting system is more than an obligation of health professionals. The future of incident reporting systems rests on targeted reporting, effective triage, and robust analytics.

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Article	Type of Study	Goal	Sample	Results	Conclusions
A12[24]	Cross-sectional study.	To evaluate the effectiveness of peer review in promoting incident reporting in the emergency department.	314 incident reports.	After the implementation of the review process, the frequency of incident reporting increased in a statistically significant way. Healthcare professionals are more likely to report incidents if they recognize value in it and if they rely on not blaming.	The implementation of a non-punitive peer review system, capable of providing timely feedback, is perceived as valuable in identifying errors and educating, and may lead to an increase in reporting.
A13[25]	Integrative Review.	To analyze and understand nurses' experiences with voluntary reporting of errors and elucidate the factors underlying the decision to report.	31 articles.	Factors perceived by nurses that facilitate reporting: • Appropriate knowledge and skills for notification; • Recognition by management teams and opportunity for open discussion; • Safe working environment; • Responsibility for individual actions. Factors perceived by nurses make reporting difficult: • Less favorable processes and systems; • Less supportive responses from managers; • Fear of guilt and shame; • Fear of punitive repercussions.	It is recommended that managers prioritize and invest in strategies to improve institutional error management approaches, and establish a fair and open safety culture in order to promote voluntary reporting.