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RESEARCH PAPER (ORIGINAL)

Processes developed by nurse managers regarding the error

Processos desenvolvidos por gestores de enfermagem face ao erro
Procesos desarrollados por los gestores de enfermería frente al error

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Abstract

Background: In the current context of patient safety promotion, nurse managers play a key role in health care.
Objectives: To identify nurse managers' perceptions and their management strategies regarding the error, and to analyze the corrective and preventive measures implemented by them.
Methodology: Qualitative study, based on James Reason's theory, with semi-structured interviews to a convenience sample of 14 nurse managers of a hospital center in the central region of Portugal. Content analysis was performed using the ATLAS.ti software.
Results: Eight categories were identified and grouped into two thematic areas. The following categories were identified: Analysis with the nurse, and Report to the physician in the Person approach; and Analysis with the team, Adverse event reporting, Working Group, Awareness, Analysis of complaints, and Positive reinforcement in the System approach.
Conclusion: Systemic categories outnumbered individual categories. Participants emphasized the need to improve adherence to reporting. No strategies for error prevention were identified.

Keywords: patient safety, safety management, risk management, nursing care

Resumo

Enquadramento: No contexto atual de promoção da segurança do doente, os enfermeiros gestores assumem um papel preponderante nos cuidados de saúde.
Objetivos: Conhecer as perceções dos enfermeiros gestores e identificar estratégias de gestão face ao erro, analisar as medidas corretivas e preventivas implementadas pelos mesmos.
Metodologia: Estudo qualitativo fundamentado na teoria de James Reason, realizado através de entrevista semiestruturada a 14 enfermeiros gestores de um centro hospitalar da região centro de Portugal, escolhidos por conveniência. Realizada análise de conteúdo com recurso ao *software* ATLAS.ti.
Resultados: Foram identificadas 8 categorias agrupadas em duas áreas temáticas. Na abordagem individual identificaram-se as categorias: Análise com o enfermeiro, e Comunicar ao médico na abordagem sistémica; Análise com a equipa, Notificação de eventos adversos, Grupo de trabalho, Sensibilização, Análise de reclamações e Reforço positivo.
Conclusão: As categorias do âmbito sistémico superam em número as do âmbito individual, os entrevistados salientaram a necessidade de melhoria na adesão à notificação, e não foram explícitas estratégias para prevenção de erros.

Palavras-chave: segurança do paciente; gestão da segurança; gestão de riscos; cuidados de enfermagem

Resumen

Marco contextual: En el contexto actual de promoción de la seguridad del paciente, los enfermeros gestores asumen un papel preponderante en los cuidados de salud.
Objetivos: Conocer las percepciones de los enfermeros gestores e identificar las estrategias de gestión frente al error, analizar las medidas correctivas y preventivas implementadas por los mismos.
Metodología: Estudio cualitativo fundamentado en la teoría de James Reason, realizado a través de una entrevista semiestructurada a 14 enfermeros gestores de un centro hospitalario de la región centro de Portugal, escogidos por conveniencia. El análisis de contenido se realizó con el *software* ATLAS.ti.
Resultados: Se identificaron 8 categorías agrupadas en dos áreas temáticas. En el enfoque individual se identificaron las categorías: Análisis con el enfermero, y Comunicar al médico en el enfoque sistémico; Análisis con el equipo, Notificación de eventos adversos, Grupo de trabajo, Sensibilización, Análisis de reclamaciones y Refuerzo positivo.
Conclusión: Las categorías del ámbito sistémico superan en número a las del ámbito individual. Los entrevistados resaltaron la necesidad de mejorar la adhesión a la notificación, y no se explicitaron estrategias para prevenir errores.

Palabras clave: seguridad del paciente, gestión de la seguridad, gestión de riesgos, atención de enfermería

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Introduction

Patient safety has been a concern in health care delivery for a very long time, ever since the father of medicine, Hippocrates, and the forerunner of nursing, Florence Nightingale, emphasized the duty of not causing any damage to the patients (Wachter, 2010). However, this issue gained particular importance when the Institute of Medicine (IOM) published the report *To err is human: building a safer health system* in 1999, warning about the high rate of deaths resulting from preventable clinical errors and about problems in the systems aimed to prevent them, putting health care a decade or more behind other high-risk industries with regard to safety. This report also highlighted that voluntary reporting systems, as well as the development and adoption of standards, would be important to manage safety, and that adequate leadership, attention, and resources can make major improvements in this context (Institute of Medicine, 1999).

Given the representativeness of this report and its major impact worldwide, safety in health became a priority to the World Health Organization (WHO), which created the World Alliance for Patient Safety. This Alliance establishes international strategies, guidelines, and goals with a view to promoting practices that ensure health care safety in different countries (World Health Organization, 2004).

Portugal, like many other countries, has established patient safety was a priority in health and has developed policies that were initially part of a more general approach - quality. With the creation of the Institute for Health Quality (*Instituto da Qualidade em Saúde* - IQS) and the National Council for Quality (*Conselho Nacional da Qualidade* - CNQ) in 1999, and the signing of a protocol with the King's Fund Health Quality Service, the Hospital Accreditation Manual was published in 2000. In 2009, the Department of Quality in Health was created with the purpose of promoting a culture of continuous quality improvement and patient safety. More recently, the National Strategy for Quality in Health 2009-2014 was created, giving rise to its homonym 2015-2020. With the growing importance of patient safety in the national agenda, the National Plan for Patient Safety 2015-2020 was created, establishing nine strategic goals and their targets, and representing a strong support to health management (Despacho nº 1400-A/2015 de 10 de Fevereiro).

In this context of broad investment in and promotion of patient safety, management plays a key role in health. Nurse managers, the so-called middle managers, have a particularly crucial role in the safe provision of care services to the population, given their responsibility for promoting a safety culture among the teams and achieving an open environment of trust and knowledge sharing, where people can learn from errors and adverse events.

In view of the above, this qualitative study, grounded on James Reason's theory, aims to contribute to improving knowledge on safety management practices in a hospital setting. To this end, the following research question was formulated: What processes do nurse managers develop regarding the error in a hospital setting? To answer this question, the following objectives were established: to identify nurse managers' perceptions of the error, identify management strategies regarding the error, and analyze corrective and preventive actions implemented for patient safety.

Background

Patient safety is a basic right in health care and therefore represents "A fundamental principle in the care provided to patients/users and a critical component in quality management" (Sousa, 2006, p. 316). Patient safety is defined as:

> Reduction of risk of unnecessary harm to an acceptable minimum. An acceptable minimum refers to the collective notions of given current knowledge, resources available and the context in which care was delivered weighed against the risk of non-treatment or other treatment. (Organização Mundial de Saúde, 2011, pp. 14-15)

Patient safety is the prevention and amelioration of adverse outcomes or injuries stemming from the processes of health care; it emerges from the interaction of different components of the system; it does not reside in a person, device, or department (Organização Mundial de Saúde, 2011).

Despite being commonplace, it is a fact that *to err is human*, because health care is provided by peo-

ple and error is inherent to the process of care delivery, leading to clinical events that may result in damage or potential damage. Error is defined as "The failure of a planned action to be completed as intended or use of a wrong, inappropriate, or incorrect plan to achieve an aim." (Organização Mundial de Saúde, 2011 p.15), since it is "A generic term to encompass all those occasions in which a planned sequence of mental or physical activities fails to achieve its intended outcome" (Organização Mundial de Saúde, 2011, p. 113).

According to a study published in 2011 by the National School of Public Health, Portuguese hospitals have an 11% incidence rate of adverse events, which is similar to other countries such as Canada - 7.5%, Denmark - 9.0%, England - 10.8%, Sweden - 12.3% or New Zealand - 12.9%. It further revealed that 53% of the situations were preventable and that hospitalization was extended in 58.2% of the cases (Sousa, Uva, & Serranheira, 2010).

Errors jeopardize patient safety, therefore, they are considered a serious public health issue that requires a joint effort to achieve health care excellence. To this end, risk management is becoming increasingly necessary "To prospectively identify accident trajectories in health care, to learn from errors, to reduce harmful consequences, and, finally, to deal with affected patients and families" (Fragata, 2009, p. 16).

This topic has aroused the interest of researchers and, in the past 5 years, there has been a significant increase of scientific research on patient safety, errors, and adverse events. There is a predominance of quantitative studies, mainly focused on the impact of care practices on patient safety outcomes, including adverse events such as falls, medication errors, and risk of infection, than on error prevention mechanisms. However, further research is still needed on this topic (Silva et al., 2016; Sousa, Uva, & Serranheira, 2010).

The importance of managers in patient safety has long been recognized in high-risk industries, thus confirming that the managers' performance influences the organizational commitment to safety, the workers' safety behaviors, and the occurrence of errors (Flyn & Yule, 2004). In health, and more specifically in nursing, although nurse managers' performance has been proven to influence the nurses' motivation and performance, studies on nurse managers' interventions regarding the safety of the care delivery process tend to focus on leadership behaviors, job satisfaction, and other organizational outcomes, and address task-oriented and relations-oriented behaviors, rather than change-oriented behaviors (Agnew & Flin, 2014). Since some risk management systems have shown that nurses have difficulties in managing and controlling risks, especially due to limited resources and complex health care activities (Farokhzadian, Nayeri, & Borhani, 2015), Reason (2000) identified two approaches to error: the person approach and the system approach. Each one corresponds to a model of error causation and, consequently, to different error management philosophies.

The person approach blames the peripheral professionals (those who provide direct care to the patient), and the evaluation of each error is performed alone. In addition, within this approach, people are free to choose between safe and unsafe behaviors and errors arise from aberrant mental processes such as forgetfulness, poor motivation, carelessness, negligence, or recklessness. So, the methods used by this approach include disciplinary measures (Reason, 2000).

The system approach assumes that humans are fallible, that errors are expected and seen as consequences rather than causes, and that they arising, not from the perversity of human nature, but from upstream inherent systemic factors. Since human nature cannot be changed, the working conditions must improve to prevent errors (Reason, 2000).

Health care delivery is a complex process where the error originates from numerous factors, such as an adverse event, making it important to analyze the error cause/origin process. Thus, Reason (2000) proposed the Swiss cheese model to explain how failures occur in a system. Systems have multiple barriers in key positions to avoid errors (technology, equipment, personnel, etc.) and, ideally, each barrier would be intact. However, these barriers have failures, which are illustrated as being the holes of Swiss cheese. In this model, these holes are continually opening, shutting, and shifting their location. The presence of a hole/failure in a barrier does not represent a bad outcome. The bad outcome happens when the holes/failures in all barriers line up in a trajectory of opportunity of risk for patients. Understanding this reality leads to proactive rather than reactive risk management.

Therefore, "The reporting of errors, near miss-

es and adverse events must be implemented to increase safety, as well as the standardization of protocols and guidelines, incorporating technologies, including communication" (Fragata, 2009, p. 17). This risk and safety management encourages and fosters a safety culture: "An integrated pattern of individual and organizational behavior, based upon shared beliefs and values, that continuously seeks to minimize patient harm which may result from the processes of care delivery" (Organização Mundial de Saúde, 2011, p. 110), promoting a set of attitudes that should be ideally implemented in close contact with the field, such as shared values about safety, revelation without guilt, and learning from errors (Fragata, 2010).

Research question

Although there are studies on patient safety, the knowledge about managers' concrete measures regarding errors is still scarce. Thus, this study seeks to answer the following research question: What processes do managers develop regarding the error in a hospital setting?

Methodology

Given the existence of quantitative studies on patient safety and the complex and dynamic nature of the topic under analysis, we developed a qualitative study, focusing on the ideas of James Reason about the approaches to error, with a view to identifying nurse managers' perceptions of safety in hospital settings. This purpose meets the objective of qualitative research of "Better understanding the facts or social phenomena that are still poorly understood" (Fortin, 2009, p. 290).

The study population was composed of nurse managers of a hospital center in the central region of Portugal. This sample was chosen by convenience and participants had to meet a specific inclusion criterion: they had to carry out management activities at a hospital nursing service. The sample was composed of 14 nurse managers: 11 women and three men.

Data were collected through individual semi-structured interviews, with open-ended questions, which were performed by the researcher at the participants' workplace. Interviews lasted on average 40 minutes and allowed identifying the participants' ideas based on their experiences (Fortin, 2009).

After data collection, the interviews were transcribed. Subsequently, an exploratory reading was performed to find common contents, which resulted in several thematic areas identified as categories. The ATLAS.ti software was then used to encode and categorize interviews. The units of analysis (codes, in the software terminology) were generated from the interviews excerpt (quotations), and, after being identified, were grouped into major thematic areas (families), which were further explored in this study.

To comply with the ethical and legal principles, we asked the Chairman of the Board of Directors and the Ethics Committee of the hospital under analysis for permission to conduct the study. The Ethics Committee informed us that it would only give its opinion if requested by the Chairman of the Board of Directors who holds the authority to approve these requests. The Chairman authorized this study without requesting the opinion from the Ethics Committee. The participants' anonymity, confidentiality, and consent were safeguarded throughout the study.

Results and Discussion

Based on the analysis of the data obtained from the nurse managers' interviews, eight categories (codes) were identified which were grouped into two major thematic areas (families) according to their systemic or individual nature, and in line with Reason's proposal for the two types of approach to error (Reason, 2000; Figure 1).

Person approach

Within the person approach, two categories were found in the nurse managers' accounts: Analysis with the nurse and Report to the physician (Figure 1). With regard to the Analysis with the nurse, six nurse managers mentioned some type of individual initiative as a way to correct an identified error: "If it's an individual and recurrent error, we talk to this colleague" (N8, feb./2015). This account implies that the error is somehow a responsibility of the nurse involved:

If a nurse makes an error, he or she

> is called in to assess the type of error, whether it was a furtive error, an error that happened only once, an error due to lack of knowledge, and then to try to find strategies to solve it and prevent it from happening again. (N4, feb./2015)

However, although they initially demonstrate an individual cause-effect philosophy, the vast majority of participants stated that, after analysis with the nurse, they take collective attitudes, orienting their discourse towards more collective measures, as in the following interview excerpt:

> My first approach will always be to identify the failure, address the professional and make a critical reflection with him or her, correct the procedure and then supervise them to see if he or she changes or not, and at the same time analyze if the error was associated with this professional in particular or if the conditions in which it happened will lead others to make the same error. (N10, feb./2015)

Most of the individual accounts were based on the need to assess the situation individually with the purpose of understanding the error mechanism: "If this is a situation in which the impact and the risk are lower for the patient, then I may speak personally with the professional . . . and analyze what has happened, we always try to understand the mechanism . . ." (N2, feb./2015).

Thus, measures are taken in the form of procedures or explanation to all nurses: "We analyze the situation with the people involved and when it is necessary to change some procedures, we usually send an email to all the nurses so that they are aware of the change in the situation" (N6, feb./2015).

However, none of the nurse managers mentioned the punishment of the nurses involved in the incident, which is a key aspect since a non-punitive culture promotes an open and transparent reporting of errors. A blame culture focuses on the individual contribution to the error, and this culture should evolve to an open and direct culture of approach to error within a learning system that is centered on causes and systems (Alahmadi, 2010).

In the individual accounts, there was still a nurse manager who mentioned the Report to the physician: "We have basically shared our knowledge and assessed the risk for the patient, if any, we then try to follow the procedure to report to the physician" (N4, Feb./2015). Despite being an individual, that is, non-punitive, attitude, it does not, however, prevent future situations; it is a corrective measure or one to limit potential damages caused by the error.

System approach

The following categories were found in the system approach: Analysis with the team, Adverse event reporting, Working Group, Awareness, Analysis of complaints, and Positive reinforcement (Figure 1).

The Analysis with the team was the most commonly reported assessment strategy by nurse managers, with nine nurse managers reporting it. This involvement of the team in the process reflects a more global view of the approach to error:

> When I talk about teamwork, I mean essentially the sharing of everything that happens at the unit, that is, in general, whenever something happens, let's say a disagreement, people talk about it openly so that it can be jointly solved. This is crucial! (N4, Feb./2015)

This account highlights a non-punitive approach to the error, in which the error is not a taboo subject within the team: "This failure has to be worked on, there is no need to hide from the team what happened, we have to work together" (N3, Feb./2015). In this way, everyone can contribute to analyzing the situation, but also make suggestions for preventing future situations: "At shift handover, we reflect on what went wrong and on what we can do to change it immediately since it is a privileged time for this analysis" (N11, Feb./2015). None of these accounts reported if the identity of the nurses involved in the situation was or not preserved in this team approach. If, on the one hand, safeguarding the nurse involved is not a concern, on the other hand, this may indicate that it should not be a problem and that each situation should be openly discussed without the people involved feeling punished: "There is a need for a culture in which this is discussed in work meetings so that people won't think that it is a denouncement" (N3, Feb./2015).

In the interviews, the Adverse event reporting was a concern for all nurse managers:

> Since we lack evidence, we speak of

> perceptions, and perceptions are not the same as evidence, when adverse events are recorded we may have some evidence. This record is and will always be anonymous, it will be done on site, at the unit service, at that time, but the person identifying it is not the head nurse but a group of nurses who will be appointed to analyze the situations reported, and to try to find out what happened without identifying the unit, they know about it but it remains in professional secrecy. (N11, Feb./2015)

Some nurse managers also expressed their desire to individually report errors within the unit: "We were told that they would implement a module in our software; our technicians haven't done it, so we will have to move forward, perhaps, individually at the service" (N8, Feb./2015). However, only one nurse manager mentioned making records in the national system for incident reporting made available by the Directorate-General for Health (*Direção-Geral da Saúde* - DGS) in 2012. In 2014, this system was redesigned and is now called *Notific@,* being a voluntary, non-punitive, and anonymous system (Direção-Geral da Saúde, 2014)**:** "I use the platform for incident/adverse event reporting, I try to implement a safety culture, an open and fair culture that encourages professionals to talk about their own errors" (N1, May/2015). Another interviewee also said:

> We have created an anonymous electronic sheet so that individual handwriting is not recognized, through which I could be easily identified. It was not important to identify the person, what was important was to analyze the episode and then what we could do to ensure that it wouldn't happen again, but there has been poor adherence. (N5, Feb./2015)

Thus, despite the poor adherence, the reporting of adverse events is a concern of nurses managers: "Recording adverse events is not yet common practice in this service, we will start implementing a non-punitive recording, which is what we believe in, but we still haven't done it" (N4, Feb./2015). With regard to the reporting of incidents in Portugal, and in line with the guidelines of the WHO and the European Commission the DGS has been developing, since 2012, several initiatives to promote incident reporting, including the publication of regulations and guidelines, handbooks for health professionals and the general public, and newsletters on the evolution of the system.

One of the strategic goals of the National Plan for Patient Safety 2015-2020 is "To ensure the systematic practice of reporting, analysis, and prevention of incidents" (Despacho nº 1400-A/2015 de 10 de fevereiro, pp. 3882-3883). This study demonstrates that nurse managers' knowledge about the reporting of adverse events is an empirical knowledge that follows a voluntary, non-punitive, and anonymous philosophy, but that is still not implemented in the services. All interviewees recognized that there is much work to be done in this area since the incident reporting system is essential for learning from adverse events and its main objective is to increase patient safety and, consequently, to continuously improve the quality of health care. "The underreporting of safety incidents is an international reality and, therefore, health care institutions need to enhance their culture of reporting and learning from errors" (Despacho nº 1400-A/2015 de 10 de fevereiro, pp. 3882-3889).

A few nurses addressed the promotion of a Working group in error and risk management: "I have two nurses allocated to these situations . . . We always analyze the situation together (try to understand why did it fail? Cross-cutting mechanism in the team) to find a solution, then we gather everyone for the awareness-raising process" (N2, Feb./2015). This shows that, although the need to further explore this area is identified, proactive initiatives within the team are still limited. Awareness, which was mentioned in this nurse manager's account, was considered by a single interviewee as a strategy to prevent future situations.

This was also the case for the Analysis of complaints: "Now we have a more updated record of the users' complaints to ensure that certain procedures are improved" (N8, Feb./2015), which is in line with a strategic, systemic approach. Through patients' reports, errors can be detected and measures implemented to prevent similar errors in the future. In addition, it complies with the quality standards of nursing care: "In the constant search for excellence in professional practice, nurses pursue the highest levels of client satisfaction" (Ordem dos Enfermeiros, Conselho de Enfermagem, 2001, p. 13-14).

Positive reinforcement was reported by a single interviewee:

> Unfortunately, the health professional is criticized rather than praised, . . . it is difficult to shift from this culture of negative reinforcement to a culture of positive reinforcement, I try, but then the work pace is such that shows your weaknesses and you need to talk about them . . . and I created a working group with systematic evaluations of some procedures to highlight things that are well-done . . . Indeed, things are more often well done than poorly done, but what is poorly done becomes more evident and is what requires intervention and change. But people expect me to be observant and call their attention to what they are doing wrong. (N5, Feb./2015)

This account confirms the concern with the change from a blame culture and the strategy adopted to change the safety culture and increase adherence to error reporting. Each "Institution should intervene without punishing the professional, but seek to understand the origins of the error, what can be changed, or collaborate to provide adequate support to patients." (Ferreira, Alves, & Jacobina, 2014, p. 68). In this way, a strong and proactive safety culture is built, which includes a commitment from the leadership to learn from errors, document patient safety, encourage teamwork, identify potential hazards, and use systems for reporting and analyzing adverse events (Alahmadi, 2010). The analysis of the data collected suggests that the person approach is still favored in the analysis of the situation, since the nurse involved is implicitly blamed: "This traditional way of intervening in case of errors triggers a cycle of fear in which no one wants to reveal or be associated with an error, and new errors are always concealed" (Fragata, 2010, p. 567). However, the initiatives and actions described by the nurse managers demonstrate a significant change to a system approach: "It was not important to identify the person, what was important was to analyze the episode and then what we could do to ensure that it wouldn't happen again, but there has been poor adherence" (N5, Feb./2015).

Therefore, it is necessary to develop a safety culture within the teams and the institution that allows for the implementation and adherence to reporting and then develop interventions to prevent future incidents. "Improving the safety culture of the internal environment of the health care institutions is an imperative and a priority established in the National Strategy for Quality in Health" (Despacho nº 1400-A/2015 de 10 de fevereiro, pp. 3882-3883).

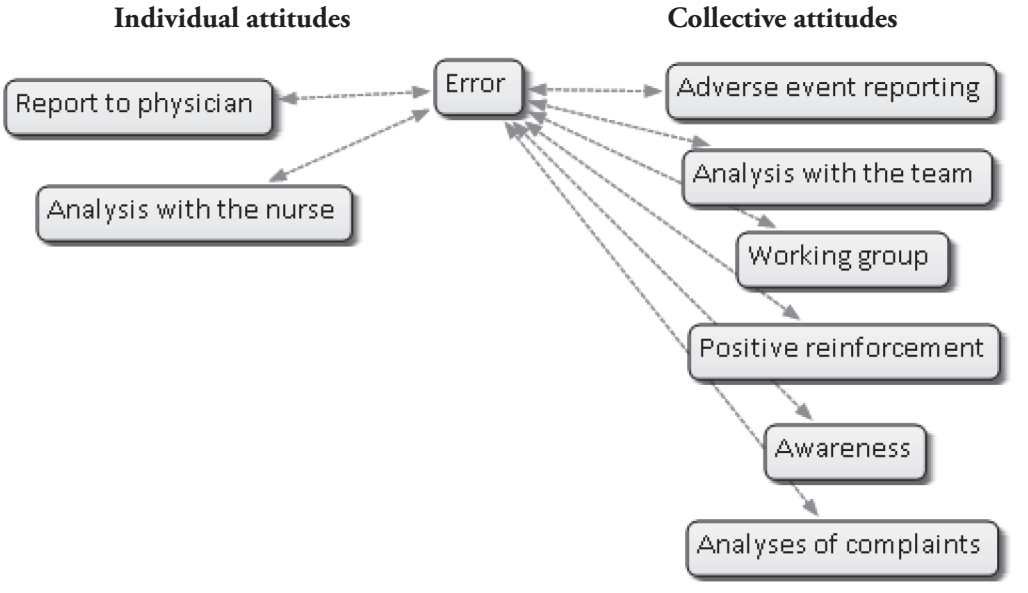

Figure 1. Thematic areas (families) and categories (codes) identified in the study.

Conclusion

This study allowed us to identify nurse managers' perceptions of error, which put into evidence an initial trend to focus the process of error analysis on the professional involved rather than on the error itself.

Data analysis showed that nurse managers are in a process of shifting their approach to error from a person approach to a system approach. The interviewees recognize not only this shift, but also the difficulties involved in changing their attitudes. The categories identified under the system approach outnumber the categories identified in the person approach. The described individual measures may be necessary to minimize the consequences of an adverse event; however, comprehensive, collective measures for error prevention and system improvement have been increasingly described, including awareness. Nurses' non-adherence to error reporting and underestimating of its importance were also recognized.

Although most of the identified categories were of collective nature, the accounts were very vague about the strategies used to analyze error situations, and the measures to prevent future errors were also unclear.

The results of this study contribute to a reflection on error management and indicate a positive evolution in relation to the traditional blame culture. However, there is still a long way to go in this area. Interviewees also recognized the need for change and investment.

We believe that nurse managers must develop risk management strategies to identify and understand the culture and practices regarding errors within their team. In this way, they will be able to identify needs and develop action plans to promote a culture of safety and error reporting.

One of the limitations of this study was the small sample size and the fact that all participants belonged to the same institution. Therefore, this study can and should be replicated in other realities for comparison of results.

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