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ACTIONS TO PROMOTE SAFE CARE IN NEONATAL INTENSIVE CARE UNITS: INTEGRATIVE LITERATURE REVIEW

Ações para promoção do cuidado seguro em unidades de terapia intensiva neonatais: revisão integrativa da literatura

Acciones para promover una atención segura en las unidades de cuidados intensivos neonatales: revisión integrativa de la literatura

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RESUMO

Objetivo: identificar as ações para promoção do cuidado seguro em unidades de terapia intensiva neonatais. **Método:** revisão integrativa da literatura realizada em quatro bases de dados. A tabulação e análise dos dados incluiu: autor, data de publicação, local de estudo, objetivo, metodologia e nível de evidência (considerando a classificação do Instituto Joanna Briggs), ações de segurança do paciente, erros e eventos adversos. **Resultados:** a amostra final resultou em 12 artigos. Os estudos dividiram-se entre os anos de 2013 e 2018 e 2019 a 2023, predominando a análise descritiva exploratória, com abordagem qualitativa. As ações para a promoção do cuidado seguro incluíram medidas instrumentais, exames/procedimentos, neuroproteção, segurança medicamentosa e ambiente de trabalho. **Considerações finais:** constatou-se que as ações para promoção do

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cuidado seguro estão principalmente relacionadas a instrumentos de avaliação da qualidade do serviço e à implementação de protocolos para execução de exames e procedimentos.

DESCRITORES: Segurança do paciente; Enfermagem neonatal; Recém-nascido.

ABSTRACT

Objective: to identify actions aimed at promoting safe care in neonatal intensive care units. **Method:** an integrative literature review conducted across four databases. Data tabulation and analysis included: author, publication date, study location, objective, methodology, level of evidence (according to the Joanna Briggs Institute classification), patient safety actions, errors, and adverse events. **Results:** the final sample included 12 articles. The studies were divided into two periods: 2013 to 2018 and 2019 to 2023, with a predominance of exploratory descriptive analysis and a qualitative approach. Actions to promote safe care included instrumental measures, tests/procedures, neuroprotection, medication safety, and the work environment. **Conclusion:** it was found that actions to promote safe care are mainly related to service quality assessment tools and the implementation of protocols for conducting tests and procedures.

DESCRIPTORS: Patient safety; Neonatal nursing; Newborn.

RESUMEN

Objetivo: identificar las acciones para la promoción del cuidado seguro en unidades de cuidados intensivos neonatales. **Método:** revisión integrativa de la literatura realizada en cuatro bases de datos. La tabulación y análisis de los datos incluyó: autor, fecha de publicación, lugar de estudio, objetivo, metodología y nivel de evidencia (considerando la clasificación del Instituto Joanna Briggs), acciones de seguridad del paciente, errores y eventos adversos. **Resultados:** la muestra final incluyó 12 artículos. Los estudios se dividieron en dos periodos: de 2013 a 2018 y de 2019 a 2023, predominando el análisis descriptivo exploratorio, con un enfoque cualitativo. Las acciones para la promoción del cuidado seguro incluyeron medidas instrumentales, exámenes/procedimientos, neuroprotección, seguridad en la medicación y ambiente de trabajo. **Conclusión:** se constató que las acciones para la promoción del cuidado seguro están principalmente relacionadas con herramientas de evaluación de la calidad del servicio y la implementación de protocolos para la realización de exámenes y procedimientos.

DESCRIPTORES: Seguridad del paciente; Enfermería neonatal; Recién Nacido.

INTRODUCTION

The neonatal intensive care unit (NICU) environment is equipped with technologies that have improved the survival of neonates, especially premature ones. However, these patients face invasive diagnostic and therapeutic approaches on a daily basis, making it imperative to create a safety culture for this care. This culture works to achieve a safe organization and improve the quality of care, as an appropriate concept for measuring patient safety (PS) strategies.[1]

Quality of care is defined as the way in which healthcare establishments strive to achieve satisfactory results in line with current scientific knowledge. Quality healthcare is everyone's right, so it is the duty of healthcare institutions to offer care that focuses on the effectiveness of services and patient satisfaction in all the care provided.[2]

In this way, good practices in health services help to provide human, structural and material resources, as well as the necessary logistical support. They ensure that patients' opinions and claims about the services provided are validated and documented, in order to avoid a drop in the quality of care.[3]

In this scenario, according to the World Health Organization, PH is defined as a framework of organized activities that creates cultures, processes, procedures, behaviors, technologies and environments in healthcare that consistently and sustainably reduce risks, decrease the occurrence of avoidable harm, make errors less likely and reduce the impact of harm when it does occur.[4:5]

It was therefore designed to reduce the occurrence of adverse events (AEs), which in turn are defined as incidents that result in harm to patients.[4:91]

In Brazil, the National Patient Safety Program (PNSP) was created, instituted by the Ministry of Health through Ordinance No. 529 of April 1, 2013, with the general objective of contributing to the qualification of health care in all health establishments in the national territory, from the public to the private sector.[5] Furthermore, the effectiveness of PS is directly

associated with the adoption of good health practices, favoring actions to prevent and control AEs and also encouraging patient participation in their own care.[6]

In view of this, the NICU stands out as an environment that requires investment in good practices, since there is a demand for immediate care for newborns, especially premature ones, who require greater caution, as most of them are unstable.[7] In addition, these patients are dependent on different types of technology, which generally interferes with the provision of more humanized care.[8]

It should be noted that the neonatal period consists of the first 28 days of life and is known as a period of extrauterine adaptation, viable for the survival of the newborn. However, when this patient shows signs and symptoms that could put their hemodynamics at risk, the NICU is the service that has the appropriate structure and technical conditions to provide specialized care.[9]

In these environments, care is given to high-risk neonates who require specialized multi-professional assistance and full-time presence. They provide patients with complete life support and extensive auxiliary support services.[7]

In addition, major advances in neonatal care technologies have made it possible to reduce the morbidity and mortality of high-risk newborns, especially premature ones. However, these new technologies, which today favor the survival of these patients, have paradoxically created conditions that contribute to the occurrence of complications, since data show that 15% of all admissions to the NICU are followed by AEs.[10]

The AEs that stand out within the NICU environment are healthcare-related infections, events associated with medication, intravascular catheters and those related to the patient's respiratory care.[11] In a study carried out in a NICU of a hospital in Maringá, Brazil, from June 2016 to March 2017, the data showed that 128 of the AEs reported monthly were linked to the procedures performed, with nasal septum injury due to the use of non-invasive ventilation and skin injury due to adhesive tape accounting for 18.75% and 14.06% of cases, respectively.[12]

Therefore, neonatal care is an area that requires actions aimed at SP, considering the uniqueness of the work process, the number of patients and their degree of fragility.[11] The aim is therefore to identify actions to promote safe care in neonatal intensive care units.

METHODS

It is an integrative literature review developed from the following stages: identification of the topic and selection of the hypothesis or research question; establishment of criteria for inclusion, exclusion of studies and literature search; categorization of studies; evaluation of the studies included in the review; interpretation of the results; and synthesis of knowledge or presentation of the review.[13]

It should be emphasized that this type of methodology allows for the gathering and synthesis of research results on a pre-established theme or guiding question, in a systematic and orderly manner, making it possible to deepen knowledge about the subject under investigation.[14,15]

With regard to the topic, it is known that neonatology is a priority area for actions aimed at patient safety, since neonatal care has a work process with numerous particularities, a number of patients involved and the consequent potential for adverse events.11 That said, this integrative review has the following guiding question: what are the actions that promote safe patient care in NICUs?

Data was collected in October 2023, using the following health descriptors (DECS): Patient Safety; Safe Care; Quality of health services; Good Practices; Intensive Care Centers for Newborns; Neonatal Intensive Care Units; Neonatal ICU. The Boolean operators OR and AND were used to create the search strategy: Patient Safety OR Safe Care OR Quality of health services OR Good Practices AND Newborn Intensive Care Centers OR Neonatal Intensive Care Units OR Neonatal ICU.

To collect the information, the Virtual Health Library (VHL) was used, with the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE), Latin American and Caribbean Literature in Health Sciences (LILACS), Coleciona SUS and Nursing Database (BDENF).

The inclusion criteria were articles in full-text format, freely available in English and Portuguese, published between January 2013 and September 2023. Also excluded were those that did not address the research question, were repeatedly indexed, editorials, reviews and experience reports. To help tabulate and analyze the data, Rayyan® software was used, a bibliography manager for publishing systematic reviews, which has often been used for other types of reviews.

An integrative review protocol was drawn up, summarizing the main information, such as: title; type of study; objective; research question; inclusion and exclusion criteria; data collection (search strategy, databases and collection period); data extraction and analysis (type of document, database, journal or HEI or institution, title, author(s), year of publication, country of origin, language, objective, type of study, approach, level of evidence, study participants, study site, actions for patient safety in the NICU, main results and conclusion); data tabulation, analysis and presentation.

The following data was taken into account when analyzing the articles: author(s), date of publication, place of study, objectives, methodology and research approach, as well as the level of evidence, considering the Joanna Briggs Institute classification system.[16]

The selected studies were analyzed and the most relevant information was extracted from them. The variables used were: title, author(s), journal, year of publication, country of origin, language, objectives, study type and approach, level of evidence, study site, sample/participants, patient safety actions, impact of these actions on the NICU environment, adverse events and/or errors cited and their causes, main results and conclusion. These variables were organized into thematic sections to facilitate the presentation and subsequent discussion of the results.

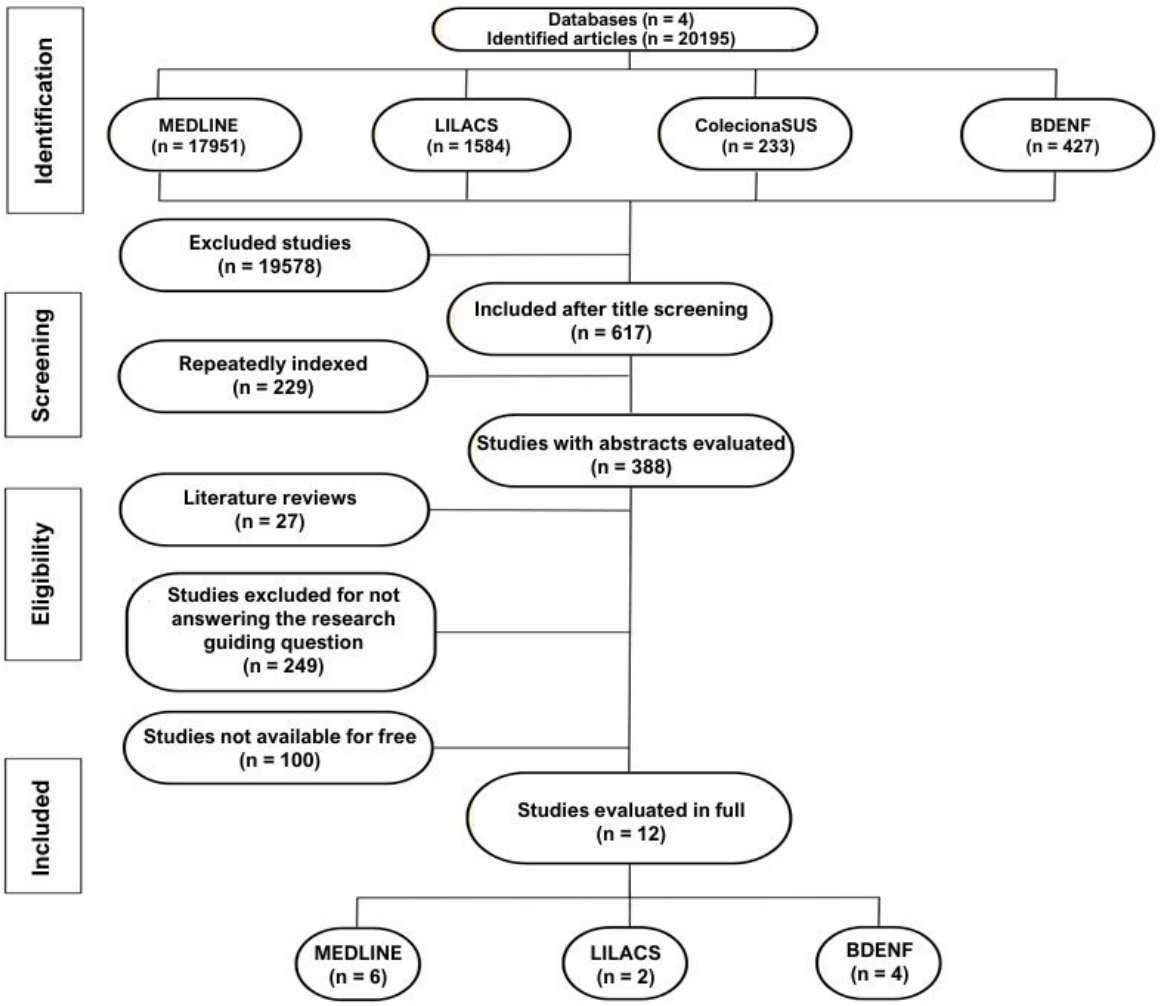
This integrative review brings together 12 articles, whose information was interpreted clearly and objectively, using descriptive statistical analysis and categorization of the data collected. The results are presented descriptively, in flowcharts and tables.

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was used to guide and clarify the evidence selection process.[17]

RESULTS

Figure 1 shows the flowchart for selecting the studies that make up the sample from the databases, describing the steps taken.

Figure 1 - Flowchart for searching the literature and including articles, according to the PRISMA guidelines. Santa Cruz, RN, Brazil, 2024



Source: Own elaboration (2024).

In the end, 12 articles were fully evaluated and included in the review. The studies were published between 2013 and 2023, a period that encompasses a decade of the National Patient Safety Program in Brazil.

The selected studies were described according to year of publication, country of origin, language, type, approach, level of evidence (LE) and sample/participants, as shown in Table 1.

Table 1 - Description of studies according to year of publication, country of origin, language, type, approach, level of evidence (LE) and sample/participants (n= 12). Santa Cruz, RN, Brazil, 2024

Variables	n	%
Year of Publication		
2013 - 2018	6	50,00
2019 - 2023	6	50,00
Country of origin of the study		
Brazil	6	50,00
United States	3	25,00
Switzerland	1	8,33
United Kingdom	1	8,33
Italy	1	8,33
Language		
Portuguese	6	50,00
English	6	50,00
Type of study		
Descriptive/Exploratory	3	25,00
Retrospective	2	16,67
Descriptive	2	16,67
Expert consensus	2	16,67
Cross-sectional	1	8,33
Exploratory	1	8,33
Cohort	1	8,33
Approach		
Qualitative	6	50,00
Quantitative	4	33,33
Quanti-Qualitative	2	16,67
Level of evidence (NE)*		
4C	6	50,00
2D	2	16,67
5B	2	16,67
3C	1	8,33
4B	1	8,33

Variables	n	%
Sample/Participants		
Articles focusing on health professionals	7	58,33
Patient-focused articles	4	33,33
Not specified	1	8,33
Total	12	100,00

Source: Own elaboration (2024).
*NE = Level of evidence according to JBI classification.

As for the description of the studies, it was observed that the period of publication was equally divided between the two halves of the decade, with six (50%) of the studies carried out between 2013 and 2018 and six (50%) carried out between 2019 and 2023. The same occurred with the characterization of languages, where half of the studies were in Portuguese and half in English. The most common methodological approach was qualitative, with six (50%), followed by quantitative, with four (33.33%). As for the type of research, the descriptive/exploratory category predominated, with a total of three (25%).

With regard to patient safety actions, the results were categorized into: instruments, exams/procedures, neuroprotection, drug safety and work environment, as shown in Table 2.

Table 2 - Actions for safe patient care cited in the studies (n=12). Santa Cruz, RN, Brazil, 2024

Actions for safe patient care in the NICU	n	%
Instruments	**8**	**75,00**
Performance evaluation / quality of care metrics[7,22,23,25-27]	6	50,00
*Round**[3,19]	2	16,67
Drawing up protocols[3,19]	2	16,67
*Sharps***[26]	1	8,33
*Qualify****[23]	1	8,33
Baby-MONITOR[27]	1	8,33
Tests/procedures	**7**	**58,33**
Identify and/or confirm patient[3,20,28]	3	25,00
Use of PPE****[3,19,28]	3	25,00
Equipment check[3,19,28]	3	25,00
Presence of health professional/ accompanying person[7,20]	2	16,67
Correct recording[18,20]	2	16,67

Actions for safe patient care in the NICU	n	%
Correct patient positioning for clinical/surgical procedures[18,28]	2	16,67
Duration of mechanical ventilation as a care metric[22]	1	8,33
Blood typing at the bedside[20]	1	8,33
Checking vital signs before and after blood transfusion[20]	1	8,33
Control of drug infusion times[20]	1	8,33
Hand hygiene[19]	1	8,33
Neuroprotection	**2**	**16,67**
Reduction of stimuli[7,21]	2	16,67
Family integration[7,21]	2	16,67
Individualized care[7,21]	2	16,67
Skin-to-skin contact[7,21]	2	16,67
Medication safety	**3**	**25,00**
Checking prescriptions[3,19]	2	16,67
Preparation and administration of medication[3]	1	8,33
Double-checking medication[19]	1	8,33
Correct storage[19]	1	8,33
Safe prescribing, dispensing and administration[19]	1	8,33
Antimicrobial management[26]	1	8,33
Work environment	**7**	**58,33**
Safe communication[3,7,18-21,28]	7	58,33
Professional training[3,7,21,25,28]	5	41,67
Adequate/sufficient material resources[3,21,28]	3	25,00
Adequate workload[3,7]	2	16,67
Team management[29,21]	2	16,67
Adequate infrastructure[19]	1	8,33

Source: Own elaboration (2024).
Round= Tool used to clarify the clinical condition of patients between professionals in the multidisciplinary team; Sharps**= Sharing Antimicrobial Reports for Pediatric Stewardship; Qualify**= instrument for the structural evaluation of quality indicators in healthcare; PPE****= Personal Protective Equipment.

The main incidents, adverse events and failures cited in the studies were: accidental extubations, pressure injuries,[3,18] incorrect handling and administration of medication,[3,19,20] inadequate use of personal protective equipment (PPE), incomplete nursing records,[3] failure to check prescriptions,[19,20] fever, cardiorespiratory arrest (CRA), emesis, failure to check vital signs after blood transfusion,[20] exposure to excessive noise and discontinuity of care.[21]

In addition, the risks associated with reintubation and complications such as hypoxia, pneumothorax, secondary pneumonia, bronchopulmonary dysplasia, upper airway trauma and delayed neuropsychomotor development have also been cited.[18]

DISCUSSION

Discussing patient safety in NICUs over the last decade is necessary, since this environment is constantly undergoing updates in terms of the provision of care, which requires significant attention as it offers care to patients with an increased degree of fragility. Therefore, the sample collected for this integrative review is the result of articles published between 2013 and 2023, a period in which there was a pause in scientific production for two consecutive years, between 2014 and 2015, but repeated again in 2021. However, Brazil stood out in terms of where the studies were carried out, which suggests that the country is interested in research aimed at improving quality and safety in neonatal intensive care.[3,7,18-21]

As expected, the studies demonstrated the need for and importance of actions aimed at patient safety, with a view to reducing the occurrence of unnecessary risks and harm, especially in the NICU environment, which provides care for high-risk, extremely fragile patients under specific care. From this perspective, it can be seen that care must coexist with good practices, since they also play a part in guaranteeing the quality of care, as they are closely linked to patient safety.[7]

With regard to the quality of the studies, according to the JBI's NE classification, the highest NE achieved by the selected articles was level 2D, corresponding to retrospective studies with a control group.[20,22] This type of study uses data collected from past information, by analyzing records and interviews, for example, in order to identify the frequency with which exposures occur in the different groups (cases and controls). In this way, they help to define the etiology of new pathologies, as they are effective in recognizing their risk factors. [20]

Thus, only one cohort study with a control group was identified, with level of evidence 3C.[23] It is known that in the health area this type of study is important, since it allows the existing relationship between the presence of risk factors or characteristics and the development of diseases to be analyzed in groups of the chosen population.[24] Furthermore, it should be noted that the non-inclusion of studies with a high level of evidence weakens the recommendation for practice and this recommendation is not the focus of this review.

As for the sample and participants, most of the studies were carried out with nursing professionals. This may be related to the fact that this class of worker is closer to the patient. Nurses are in full contact with the patient, which contributes to their ability to identify risks and potential safety measures to reduce errors more frequently.[3]

On the other hand, the NICU is seen as an environment that requires investment in good practices, since the patients cared for there not only have the immediate needs and care of newborns, most of whom are premature, but are also admitted because of their unstable health condition and dependence on specific technologies, which ends up making it difficult to provide more humanized care.[3]

With regard to PS actions, they were categorized into instruments, exams and procedures, neuroprotection, drug safety and work environment. The actions that were emphasized in the selected articles were the development of materials to evaluate performance and service quality metrics, representing the subgroup of care instruments,[7,22,23,25-27] followed by the exercise of safe communication, in the work environment subgroup.[3,7,18-21,28]

Studies show that instruments that indicate the quality of care promote a closer relationship between the health service and the patient and their family, as well as being important for patient safety, since they include satisfaction with the treatment and the efficiency of the service, being essential for the management of care together with the alignment of improvements that enable the implementation of good practices.[7,27]

In this sense, the relevance of instruments to assess the quality of care in the NICU stands out, considering that this environment has sought to advance its techniques and management in order to reduce the mortality rates of its patients, who in turn cannot be compared with conventional intensive care patients, since these are neonates who, due to their extreme age, require increasingly specialized services.[22,23]

When carrying out examinations and procedures, it is crucial that the professional is aware of the requirements that seek to guarantee patient safety, in order to minimize the occurrence of errors and adverse events.[20] During the radiographic examination, for example, the patient needs to be correctly positioned and fitted with protective equipment to avoid repeated and undue exposure, where immobilization can be achieved with the use of "nests" made from synthetic material or pediatric sandbags. This is one of the ways of guaranteeing the safety of the newborn based on good health practices.[28]

In the process of treating premature babies, the risk of infection must be considered one of the main fatalities. Knowing this and still using radiological examination as an

example, the therapeutic relationship between the doctor and the patient's relatives is a fundamental priority during treatment, as it allows for proper communication about the benefits arising from the procedure, the dose of ionizing radiation and its potential adverse effects, avoiding unjustified concerns and refusals of necessary examinations.[28]

Furthermore, the lack of communication between the multi-professional team can have negative effects on the neonatal patient. A clear example is the excessive handling of the newborn, which can be avoided if there is joint planning of procedures and conducts.[18] Thus, it is understood that communication is a fundamental part of conflict management, and it is even suggested that team meetings be included in the care routine, as well as drawing up protocols for carrying out procedures and standardizing information. These are some strategies for implementing safe communication, providing mutual understanding of problems and self-correction of behavior.[3]

Furthermore, one study points out that communication between professionals and patients and/or their guardians is still a problem in healthcare institutions, considering the difficulty in involving the family in care as a negative factor for the patient's therapeutic safety.[20] Therefore, it is crucial that professionals try to adapt to the language of the interlocutors, avoiding, if possible, scientific or statistical terms and complex numbers, to try to convey the message in the clearest way and resolve the most frequent doubts.[28]

The importance of teamwork is reiterated when he states that this is perhaps the key to the functioning of the health service, and is entirely linked to the personal and professional development of the staff. The same author also points out that professional training is an excellent strategy for improving adherence to good practices.[21]

Health care should be based on the principle of doing no harm.(20) However, it has been observed that the lack of adequate material resources and work overload interfere with the provision of humanized care, reducing the effectiveness of safe and quality care, above all, giving rise to errors and adverse events.[3]

When it comes to neonatology, which is linked to 70% of deaths in the first year of life, good practices and care management are essential, especially in the development of humanized actions to reduce infant mortality rates.[7]

In the NICU, humanized care is fundamental for the patient's good recovery, and together with relevant technological advances, it has ensured an increase in patient survival. Therefore, neuroprotection strategies are good practices, such as noise and light control, family presence and participation, skin-to-skin contact, individualized handling and respect for the newborn's behavioral cues.[21]

These strategies make up the care model of the Brazilian kangaroo method, which begins in hospital and continues in primary care. This method has proven benefits, such as: shorter hospitalization time, better thermal stability, less crying, increased breastfeeding and weight gain, affective bonding, pain relief, among others.[21]

In order to offer care based on good practices and humanization, NICU professionals must seek to understand the patient as a subjective being, considering all their biopsychosocial spheres and using the appropriate strategies for each demand, which go beyond technical procedures.[7]

With regard to medication safety, the third international target for PS talks about improving safety in the prescription, use and administration of medicines, considering that errors in the medication process can lead to delays in patient rehabilitation, increased length of stay and higher costs for the hospital.[3]

Errors in the medication process are the most frequent incidents in the NICU, especially with regard to incorrect dosage, followed by failure to administer the prescribed medication or failure to prescribe the necessary medication, failure in the administration technique and the wrong route of administration. This shows that errors in the medication process are an important cause of adverse events in the NICU.[19]

With this in mind, it is clear that the inappropriate use of infusion pumps is detrimental to the medication process, since incorrect programming of the pump may allow the medication to be infused earlier or later than planned, constituting a serious error.[3]

In addition, nurses are involved in the preparation and administration of medicines. They must therefore be aware of the nine keys to drug safety, which involve: the right patient, the right medication, the right route, the right dose, the right time, the right record, knowing the action, pharmaceutical presentation and monitoring the effect. However, it is worth pointing out that the medication process is a complex responsibility and that it is vulnerable to failures at any of its stages, from the prescription to the administration of the drug.[3]

It should also be noted that there is a frequent mismatch between the demands of the service and the number of professionals available.[21] Therefore, the NICU, as a sector that provides highly complex services, needs to reconcile technological resources and properly manage human resources, deciding on a fair number of patients among nursing professionals, who in turn work entirely on the front line of care. In this way, it is possible to avoid overloading these professionals and improve the working environment.[7]

FINAL CONSIDERATIONS

The actions that promote safe care that are most present in the NICU are related to the provision of instruments to assess the quality of the health service, as well as the establishment of protocols that determine the correct and safe route for carrying out tests and procedures. In addition, they address strategies for neuroprotection and reducing stressful stimuli, the importance of drug safety and a suitable working environment for providing comprehensive care.

The results of this integrative review show that patient safety is capable of reducing the occurrence of errors and adverse events through interventions that encourage the change or elimination of habits that are unfavorable to the quality of care.

Furthermore, it is crucial to develop research related to this topic from the perspective of the nursing professional, reiterating the justification that this category is involved in care in an integral way, so as to be diligent when it comes to identifying the risks arising from inadequate care and their respective solutions.

The study's limitations include the inclusion of research restricted to English and Portuguese, the limited number of databases consulted, and the unavailability of some texts in their full version for download and analysis in their entirety. When this type of situation occurred, attempts were made to use other sources of data, but were unsuccessful. This may have reduced the final sample. It is suggested that future research should look into the correlation between the lack of implementation of patient safety measures and the probable risk of errors and adverse events.

It should be added that this study provides concise knowledge about the patient safety actions most present in the NICU, serving as a basis for future research, as well as facilitating the planning of possible strategies that make positive changes to this care scenario.

REFERENCES

1. Babaie M, Nourian M, Atashzadeh-Shoorideh F, Manoochehri H, Nasiri M. Patient safety culture in neonatal intensive care units: A qualitative content analysis. Front Public Health. [Internet]. 2023 [cited 2024 oct 18];11:1065522. Available from:: https://doi.org/10.3389/fpubh.2023.1065522.

2. Ministério da Saúde (BR). Agência Nacional de Vigilância Sanitária. Assistência Segura - Uma Reflexão Teórica Aplicada à Prática [Internet]. Brasília: Ministério da Saúde; 2017 [acesso em 18 de outubro 2024]. Disponível em: https://www.gov.br/anvisa/pt-br/centraisdeconteudo/publicacoes/servicosdesaude/publicacoes/publicacoes/caderno-1-assistencia-segura-uma-reflexao-teorica-aplicada-a-pratica.pdf/view.

3. Duarte SDCM, Azevedo SSD, Muinck GDCD, Costa TFD, Cardoso MMVN, Moraes JRMMD. Best Safety Practices in nursing care in Neonatal Intensive Therapy. Rev Bras Enferm. [Internet]. 2020 [cited 2024 oct 18];73(2):e20180482. Available from: https://doi.org/10.1590/0034-7167-2018-0482.

4. Organização Mundial da Saúde (OMS). Plano de ação global para a segurança do paciente 2021-2030: Em busca da eliminação dos danos evitáveis nos cuidados de saúde. [Internet]. 2021 [acesso em 18 de outubro 2024]. Disponível em: https://www.conass.org.br/wp-content/uploads/2022/11/document.pdf.

5. Ministério da Saúde (Brasil). Portaria Nº 529, de 1º de Abril de 2013. Institui o Programa Nacional de Segurança do Paciente (PNSP). Diário Oficial da União 1º abr 2013. Disponível em: https://bvsms.saude.gov.br/bvs/saudelegis/gm/2013/prt0529_01_04_2013.html.

6. Sousa KDM. Qualidade da atenção obstétrica e neonatal: boas práticas, eventos adversos e efeitos do checklist para parto seguro da OMS. [Pós-Graduação em Saúde Coletiva]. Natal (Brasil): Universidade Federal do Rio Grande do Norte; 2020. [acesso em 17 de outubro 2024]. Disponível em: https://repositorio.ufrn.br/handle/123456789/29054.

7. Sonaglio BB, Santos MMS, Souza FR, Klock P. Nursing care management in a neonatal unit: good practices in unique living conditions. Rev Pesqui Cuid Fundam (Online). [Internet]. 2022 [cited 2024 oct 17];14. Available from: https://doi.org/10.9789/2175-5361.rpcfo.v14.11420.

8. Moretto LCA, Perondi ER, Trevisan MG, Teixeira GT, Hoesel TC, Dalla Costa L. Dor no recém-nascido: perspectivas da equipe multiprofissional na unidade de terapia intensiva neonatal. Arq Ciênc Saúde Unipar. [Internet]. 2019 [acesso em 17 de outubro 2024];23(1). Disponível em: https://doi.org/10.25110/arqsaude.v23i1.2019.6580.

9. Noleto RC, Campos CFA. Strategies developed by nurses to ensure patient safety in the Neonatal Intensive Care Unit. JNT. [Internet]. 2020 [cited 2024 oct 18];2(16). Available from: https://revistas.faculdadefacit.edu.br/index.php/JNT/article/viewFile/605/455.

10. Araújo GTD, Guimarães EL. Complicações ventilatórias em neonatos na unidade de terapia intensiva neonatal: revisão integrativa. RSD. [Internet]. 2022 [acesso em 18

de outubro];11(11):e255111133553. Disponível em: https://doi.org/10.33448/rsd-v11i11.33553.

11. Cossul MU, Neiva LECDP, Silveira AO. Notificação de eventos adversos em uma Unidade de Terapia Intensiva Neonatal. Rev. Enferm. UFPE on line. [Internet]. 2021 [acesso em 16 de outubro 2024;15(1). Disponível em: https://doi.org/10.5205/1981-8963.2021.246969.

12. Spironello RA, Nakamura Cuman RK. Caracterização de eventos adversos em uma unidade de terapia intensiva neonatal. Revista Recien. [Internet]. 2019 [acesso em 16 de outubro 2024];9(28). Disponível em: https://doi.org/10.24276/rrecien2358-3088.2019.9.28.131-136.

13. Sousa LMM, Marques-Vieira CMA, Severino SSP, Antunes AV. A metodologia de revisão integrativa da literatura em enfermagem. In: Cruz AG, direção geral. Investig Enferm. [Internet]. 2017[acesso em 16 de outubro 2024];21(2). Disponível em: http://www.sinaisvitais.pt/images/stories/Rie/RIE21.pdf#page=17.

14. Souza MTD, Silva MDD, Carvalho RD. Integrative review: what is it? How to do it? Einstein. [Internet]. 2010 [cited 2024 oct 16];8(1). Available from: https://doi.org/10.1590/S1679-45082010RW1134.

15. Galvão CM, Sawada NO, Trevizan MA. Revisão sistemática: recurso que proporciona a incorporação das evidências na prática da enfermagem. Rev. Lat.-Am. Enferm. (Online). [Internet]. 2004 [cited 2024 oct 17];12(3). Disponível em: https://doi.org/10.1590/S0104-11692004000300014.

16. Joanna Briggs Institute. JBI Levels of Evidence. [Internet]. 2013[cited 2024 oct 19]:1-5. Disponível em: https://jbi.global/sites/default/files/2019-05/JBI-Levels-of-evidence_2014_0.pdf.

17. Page MJ, Mckenzie J, Bossuyt P, Boutron I, Hoffmann T, Mulrow CD. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. [Internet]. 2021[cited 2023 oct 19];372(71). Available from: https://doi.org/10.1136/bmj.n71.

18. Pinto MMM, Sousa NR de, Maranhão TSV, Rolim KMC, Magalhães FJ, Vasconcelos SP de, et al. Intervenções de enfermagem na prevenção de extubação não programada em recém-nascidos: bundle de boas práticas. Enfermagem em Foco. [Internet]. 2019 [acesso em 18 de outubro 2024];10(7). Disponível em: https://doi.org/10.21675/2357-707X.2019.v10.n7.2423.

19. Costa JFC, Silva LSG, Cava AML. Qualidade e segurança da assistência em pediatria. REUOL. [Internet]. 2019 [acesso em 18 de outubro 2024];13. Disponível em: https://doi.org/10.5205/1981-8963.2019.239343.

20. Santos MM, Souza VSD, Almeida RGDS, Wegner W, Figueira MCES, Machado CFT. Pediatric patient safety in the administration of blood components. Texto contexto enferm. (Online). [Internet]. 2023 [cited 2024 oct 18];32:e20220234. Disponível em: https://doi.org/10.1590/1980-265X-TCE-2022-0234en.

21. Silva LJD, Leite JL, Silva TPD, Silva ÍR, Mourão PP, Gomes TM. Management challenges for best practices of the Kangaroo Method in the Neonatal ICU. Rev. Bras. Enferm. (Online). [Internet]. 2018[cited 2024 oct 18];71(suppl 6). Available from: https://doi.org/10.1590/0034-7167-2018-0428.

22. Blinder JJ, Thiagarajan R, Williams K, Nathan M, Mayer J, Kulik TJ. Duration of Mechanical Ventilation and Perioperative Care Quality After Neonatal Cardiac Operations. ATS. [Internet]. 2017 [cited 2024 oct 18];103(6). Available from: https://doi.org/10.1016/j.athoracsur.2016.11.077.

23. Adams M, Hoehre TC, Bucher HU. The swiss neonatal quality cycle, a monitor for clinical performance and tool for quality improvement. BMC pediatr. (Online). [Internet]. 2013[cited 2024 oct 18];13(1). Available from: https://doi.org/10.1186/1471-2431-13-152.

24. Vizzotto Jr AO, Nicolau SM, Lopes GM, Castelo Filho A. Risk factors for the development of endometrial lesions in breast cancer patients using tamoxyphen: a retrospective cohort study. Rev. Col. Bras. Cir. (Online). [Internet]. 2023[cited 2024 oct 18];50:e20233442. Available from: https://doi.org/10.1590/0100-6991e-20233442-en.

25. De Boode WP, Singh Y, Gupta S, Austin T, Bohlin K, Dempsey E, et al. Recommendations for neonatologist performed echocardiography in Europe: Consensus Statement endorsed by European Society for Paediatric Research (ESPR) and European Society for Neonatology (ESN). Pediatr Res. [Internet]. 2016 [cited 2024 oct 18];80(4). Available from: https://doi.org/10.1038/pr.2016.126.

26. Newland JG, Gerber JS, Kronman MP, Meredith G, Lee BR, Thurm C, et al. Sharing Antimicrobial Reports for Pediatric Stewardship (SHARPS): A Quality Improvement Collaborative. J. Pediatr. Infect. Dis. Soc. [Internet]. 2018 [cited 2024 oct 18];7(2). Available from: https://doi.org/10.1093/jpids/pix020.

27. Profit J, Zupancic JAF, Gould JB, Pietz K, Kowalkowski MA, Draper D, et al. Correlation of Neonatal Intensive Care Unit Performance Across Multiple Measures of Quality of Care. JAMA Pediatr. [Internet]. 2013 [cited 2024 oct 18];167(1). Available from: https://doi.org/10.1001/jamapediatrics.2013.418.

28. Del Vecchio A, Salerno S, Barbagallo M, Chirico G, Campoleoni M, Cannatà V, et al. Italian inter-society expert panel position on radiological exposure in Neonatal Intensive Care Units. Ital. j. pediatr. (Online). [Internet]. 2020 [cited 2024 oct 18];46(1). Available from: https://doi.org/10.1186/s13052-020-00905-5.