Safety culture in the Neonatal Intensive Care Unit: contributions from the multiprofessional team

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Abstract

Objectives: to analyze the patient safety culture with the multidisciplinary team in a neonatal ICU at a Brazilian maternity.

Methods: the safety culture was evaluated by the Hospital Survey on Patient Safety Culture (HSOPSC), with a sample of 117 professionals. The questions were divided into 12 domains, classifying them as areas of strength when the percentage was higher than 75% of positive responses. For inferential analysis, Kruskal-Wallis and Chi-square tests were used, considering significant $p<0.05$ values.

Results: the domains 'organizational learning- continuous improvement' and 'teamwork' were considered as areas of strength in establishing security. Those who needed improvement were: 'non-punitive response to error' and 'staffing'. There was no significant relevance between the crossings of the numbers of positive responses with the professional data, thus showing that the factors did not interfere in the answers given.

Conclusions: in view of the results presented, changes are suggested mainly in the aspects related to punitive culture and evaluation of possible reduction of work overload. However, we cannot fail to praise the positive aspects found, such as teamwork, the concern of professionals and managers to bring improvements to promote patient safety.

Key words *Patient safety, Intensive care units neonatal, Patient care team*

http://dx.doi.org/10.1590/1806-9304202200020007

Introduction

Concern for patient safety is not a recent fact, Hippocrates (460 to 370 BC), considered the father of medicine, mentioned in speeches: 'first, do not cause harm'. In this way, it is perceived since that time, there was already a discussion about the harm that healthcare could cause to patients.[1]

The expansion and establishment of the patient safety program on the world scenario has become essential for harm reduction in healthcare.[2] Actions and research aimed at this theme have expanded after the publication, in the 2000s, of the report 'To err is human: building a safer health system', in which the consequences of mistakes made during healthcare in the North American scenario were addressed.[3]

In Brazil, great progress on this topic was achieved through the publication of Ordinance No. 529, of April 1, 2013, which established the *Programa Nacional de Segurança do Paciente* (PNSP) (National Patient Safety Program) and gave important definitions, such as patient safety, which consists of 'reducing, to an acceptable minimum, the risk of unnecessary harm associated with healthcare'.[4]

Studies around the world have shown that many of the damages caused by healthcare could be prevented. Research carried out in Ireland showed that of the 12.2% Adverse Events (AE), more than 70% were preventable, of which 9.9% caused permanent damage and 6.7% contributed to death.[5] Another investigation carried out in Belgium showed that 56% of the medical records analyzed contained AE and, of these, 46% were preventable. It was also highlighted that AEs were mainly related to drug therapy, surgery, diagnosis, and systemic problems in the institutions.[6]

In the context of newborn care units, the establishment of a safe environment is essential to promote the reliability of the services provided. Research carried out in Brazil, with 218 newborns, showed that 183 (84%) had AE. Among the events found, 29% of changes in thermoregulation, 17.1% of blood glucose disorders and 13.5% of healthcare-related infection stood out. Also, a higher incidence of AE was observed among very low birth weight newborns.[7]

In view of these data, debates on the incidents that occurred are necessary for the transformation of services into safer environments, and these changes are directly linked to the patient safety culture implemented in the institution.[8] For the Ministry of Health, patient safety culture is a set of values not specific to an individual, but of collective responsibility, including the health team, the family and society.[1] Halligan and Zecevic[9] state that the concept of patient safety culture refers to a set of group behaviors that determine and reflect positively or negatively on patient safety.

In this way, it becomes important, for safe neonatal care, to identify the set of values and behaviors that can influence the direct care of the newborn, which reflect the patient safety culture and, through this, proposes actions that could contribute to the reduction of risks and damages, thus obtaining more security during the process of hospitalization of the neonate. From this perspective, this article aimed to evaluate the patient safety culture in a Neonatal Intensive Care Unit, from the perspective of the multiprofessional team, in a Brazilian maternity hospital.

Methods

This is a descriptive, cross-sectional study with a quantitative approach, carried out in a neonatal ICU of a public hospital in Fortaleza - CE, Brazil. The aforementioned mission of the institution is to provide assistance, teaching, and research in the field of women's and newborn health, which has 21 neonatal ICU beds, 30 Conventional Neonatal Intermediate Care Units (UCINCo) and five beds in Kangaroo Intermediate Neonatal Care Units (UCINCa).[10]

The study population consisted of 243 professionals, distributed in a nursing team, neonatologists, medical residents, social workers, psychologists, physiotherapists, occupational therapists, speech therapists, pharmacists, and nutritionists. From this population, a sample calculation was performed with a confidence level of 95% and a sample error of 7%, obtaining, in the end, a sample of 117 professionals. Data collection was intentional, non-probabilistic and stratified by professional categories.

In order to maintain confidentiality and avoid identification of participants, the professionals were grouped by categories, distributed among 17 nurses, 26 neonatologists, eight neonatology residents, 42 nursing technicians, 16 physiotherapists/occupational therapists/speech therapists and eight social workers/psychologists/pharmacists/nutritionists.

In addition, the following inclusion criteria were used: health professionals of all categories and who had been working in the sector for more than two months, since the questionnaire guide used establishes that professionals must have sufficient knowledge about the hospital and the respective operations to provide adequate answers to the research questions.[11] As exclusion criteria, the following were listed: professionals on vacation, sick leave, maternity or paternity leave or medical certificate and consent withdrawal, after starting the data collecting.

Data collection took place between August and November 2018, with the application of the Hospital Survey on Patient Safety Culture (HSOPSC) questionnaire,

with the professionals being examined individually and confidentially. The instrument used has nine sessions (A, B, C, D, E, F, G, H, I), containing 42 questions, arranged for data analysis in 12 dimensions to be analyzed on the safety culture, namely: teamwork among units, expectations and actions promoting safety, organizational learning, hospital management support for patient safety, safety perception, feedback and communication about errors, openness for communication, frequency of event reporting, teamwork among hospital units, staffing, problems with shift changes and hospital handoffs, and nonpunitive response to errors.[11]

This questionnaire is based on a Likert-type scale, and it is recommended to group responses by categories of positive findings (strongly agree/agree and always/often), negative (strongly disagree/disagree and never/rarely) and neutral (neither agree nor disagree/sometimes).

Some questions have the reverse value, that is, when disagreeing with the alternative, the participant expresses a positive attitude. In view of the above, these were identified with the letter R. The questions that have this value are items 5, 7, 8, 10, 12, 14, 16 and 17 of section A, four of section B, six of section C, and 2, 3, 5, 6, 7, 9 and 11 of section F.[11]

In addition to questions directly related to the theme, the questionnaire investigates the perception of the patient's level of safety (excellent, very good, fair, bad, very bad); number of events reported by participants; questions related to the performance of this professional within the team, such as working time in the institution and in the unit, weekly hours worked, position/function, establishment of direct interaction with patients, length of experience in the profession, education level, age and sex.[11]

The research data were arranged in Microsoft Office Excel 2013, in spreadsheets and, later, analyzed by the SPSS program, v.22.0. For the descriptive analysis of the data, percentages were established for each category of responses, being these positive, negative, or neutral. To establish the areas that were highlighted, the percentage of 75% of positive responses was considered and for those that needed improvement, the percentage of ≤50% of positive responses was established.[11]

To obtain the results of this study, both values and percentages were calculated considering the total responses in each dimension of safety culture, these values being modifiable according to the number of responses given in each dimension.

Also, the data of the professional profile was crossed with the patient's level of safety, number of reported events and positive responses about the safety culture, using the Chi-square and Kruskal Wallis tests, considering significant values with $p<0.05$.

The ethical aspects established by Resolution 466/2012 were respected at all times of the research. This study was submitted to *Plataforma Brasil* (Brazil Platform) and was approved by the Ethics Committee of the *Maternidade Escola Assis Chateaubriand* at the *Universidade Federal do Ceará* (UFC), according to Opinion Report Number 2,786,259.

Results

The data showed that 94% (n=110) of the participants were female, aged between 18 and 58 years, with a mean age of 35.5 (±6.6). Regarding the findings related to the professional profile, it was found that the participants had an average of 9±5.8 years of higher educational schooling. Most professionals (76%; n=89) had worked for five years in the institution; 71.8% (n=84) had worked for five years in the neonatal ICU and 84.6% (n=99) reported working 20 to 39 hours per week.

Regarding the assessment of patient safety culture (Table 1), a total of 2,611 positive responses (53.8%), 1,067 (22%) neutral and 1,178 (24.2%) negative responses were identified. When considering the 42 questions about the safety culture and the established percentage of 75% of the response to determine areas of strength, a response survey was carried out according to the established domains.

These domains are shown in Figure 1, in which domain 3 "Organizational learning - continuous improvement" obtained 79.4% (n=277) of positive responses. Among the questions that make up this domain, 'We are actively doing things to improve patient safety' represented 92.3% (n=108) and 'After implementing changes to improve patient safety, we evaluated the effectiveness' obtained 74.1% (n=86) of positive responses (Table 1).

The domain 'Teamwork among units' presented a percentage of positive responses of 76% (n=355), and as part of this domain, the items 'In this unit, people treat each other with respect' and 'In this unit, people support each other' were the ones that showed significant levels of positive responses, having, respectively, percentages of 87.2% (n=102) and 76.9% (n=90).

It is noteworthy that domain 2, which refers to the supervisor's expectations and actions to promote patient safety, presented a result of 71% (n=330) of positive responses. This domain presented as a prominent item to the question 'My supervisor/boss does not pay enough attention to patient safety problems which happens repeatedly', with 83.5% (n=96) of the participants disagreeing with the statement. The item referring to the supervisor's praise for employees had a lower percentage of positive responses, with 64.9% (n=76).

As for 'Feedback and communication about errors', it was observed that this domain had a positive profile, with

Table 1

Grouping of 42 questions from the Hospital Survey on Patient Safety Culture (HSOPSC) instrument into domains. Fortaleza, CE, Brazil, 2018.

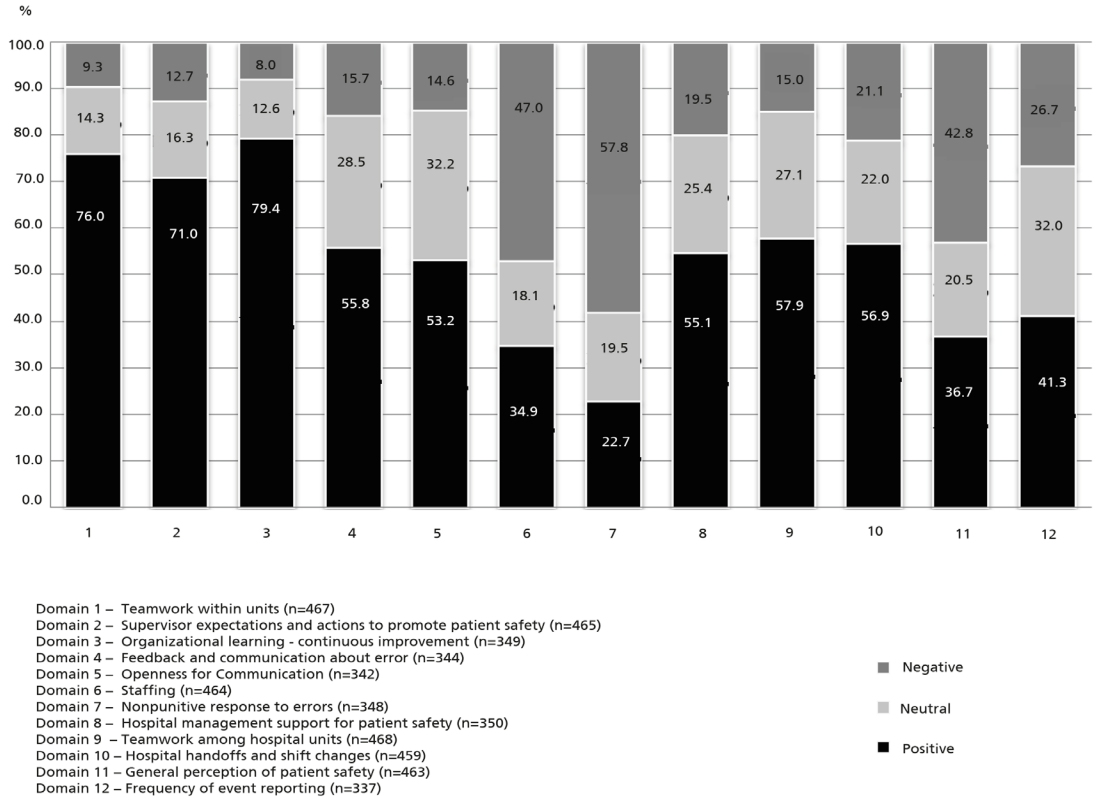
	Positive Responses		Neutral Responses		Negative Responses		Total	
	n	%	n	%	n		N	%
DOMAIN 1 (Teamwork within units)								
A1 - In this unit, people support each other.	90	76.9	18	15.4	9	7.7	117	100.0
A3 - When there is a lot of work to be done quickly, we work together as a team to complete it properly.	88	75.2	21	17.9	8	6.9	117	100.0
A4 - In this unit, people treat each other with respect.	102	87.2	9	7.7	6	5.1	117	100.0
A11 - When an area of this unit becomes overloaded, the other professionals in this unit help.	75	64.6	19	16.4	22	19.0	116	100.0
Total overall	355	76.0	67	14.3	45	9.7	467	100.0
DOMAIN 2 (Supervisor expectations and actions to promote patient safety)								
B1 - My supervisor/boss praises when he/she sees work performed in accordance with established patient safety procedures.	76	64.9	18	15.4	23	19.7	117	100.0
B2 - Does my supervisor/boss really consider the professionals' suggestions for improving patient safety.	81	69.2	21	17.9	15	12.9	117	100.0
B3 - Whenever the pressure builds, my supervisor/boss wants us to work faster, even if it means 'skipping steps'.	77	66.4	26	22.4	13	11.2	116	100.0
B4 - My supervisor/boss does not pay enough attention to patient safety issues that happen over and over again.	96	83.5	11	9.7	8	7.0	115	100.0
Total	330	71.0	76	16.3	59	12.7	465	100.0
DOMAIN 3 (Organizational learning - continuous improvement)								
A6 - We are actively doing things to improve patient safety.	108	92.3	6	5.1	3	2.6	117	100.0
A9 - Errors have led to positive change around here.	83	71.6	18	15.5	15	12.9	116	100.0
A13 - After implementing changes to improve patient safety, we evaluated the effectiveness.	86	74.2	20	17.2	10	8.6	116	100.0
Total	277	79.4	44	12.6	28	8.0	349	100.0
DOMAIN 4 (Feedbackand communication about errors)								
C1 - We receive information about implemented changes from the event reports.	52	45.6	37	32.5	25	21.9	114	100.0
C3 - We are informed about errors that happen on this unit.	59	51.3	36	31.3	20	17.4	115	100.0
C5 - In this unit, we discuss ways to prevent errors from happening again.	81	70.4	25	21.8	9	7.8	115	100.0
Total	192	55.8	98	28.5	54	15.7	344	100.0
DOMAIN 5 (Openness for Communication)								
C2 - Professionals are free to say when they see something that could negatively affect patient care.	89	78.1	19	16.7	6	5.3	114	100.0
C4 - Professionals feel free to question the decisions or actions of their superiors.	36	31.3	47	40.9	32	27.8	115	100.0
C6 - Professionals are afraid to ask when something appears to be not right.	57	50.4	44	38.9	12	10.7	113	100.0
Total	182	53.2	110	32.2	50	14.6	342	100.0

DOMAIN 6 (Staffing)								
A2 - We have enough staff to handle the workload.	10	8.6	6	5.2	100	86.2	116	100.0
A5 - The professionals in this unit work longer hours than would be best for patient care.	34	29.3	33	28.4	49	42.4	116	100.0
A7 - We use more temporary and outsourced professionals than is desirable for patient care.	92	80.0	16	13.9	7	6.1	115	100.0
A14 - We work in a 'crisis situation', trying to do too much, too fast.	26	22.2	29	24.8	62	53.0	117	
Total	162	34.9	84	18.1	218	47.0	464	100.0
DOMAIN 7 (Nonpunitive response to error)								
A8 - Professionals feel that their mistakes can be used against them.	21	18.1	20	17.2	75	64.7	116	100.0
A12 - When an event is reported, it appears that the focus is on the person rather than the issue.	40	34.5	25	21.5	51	44.0	116	100.0
A16 - Professionals are concerned that their mistakes are registered on their job records.	18	15.5	23	19.8	75	64.7	116	100.0
Total	79	22.7	68	19.5	201	57.8	348	100.0
DOMAIN 8 (Hospital management support for patient safety)								
F1 - Hospital management provides a working climate that promotes patient safety.	53	45.3	41	35.0	23	19.7	117	100.0
F8 - Hospital management actions demonstrate that patient safety is a top priority.	74	63.8	21	18.1	21	18.1	116	100.0
F9 - Hospital management only seems interested in patient safety when an adverse event occurs.	66	56.4	27	23.1	24	20.5	117	100.0
Total	193	55.1	89	25.4	68	19.5	350	100.0
DOMAIN 9 (Teamwork among hospital units)								
F2 - Hospital units are not well coordinated with each other.	51	43.6	36	30.8	30	25.6	117	100.0
F4 - There is good cooperation between hospital units that need to work together.	72	61.5	30	25.6	15	12.9	117	100.0
F6 - It is often unpleasant to work with professionals from other hospital units.	69	59.0	29	24.8	19	16.2	117	100.0
F10 - Hospital units work well together to provide the best care for patients.	79	67.5	32	27.4	6	5.1	117	100.0
Total	271	57.9	127	27.1	70	15.0	468	100.0
DOMAIN 10 (Hospital handoffs and shift changes)								
F3 - The care process is compromised when a patient is transferred from one unit to another.	65	55.6	24	20.5	28	23.9	117	100.0
F5 - It is common for important information about patient care to be lost during shift changes or shifts.	58	50.0	26	22.4	32	27.6	116	100.0
F7 - Problems often occur in the exchange of information between hospital units.	55	50.0	29	26.4	26	23.6	110	100.0
F11 - In this hospital, shift or shift changes are problematic for patients.	83	71.6	22	19.0	11	9.4	116	100.0
Total	261	56.9	101	22.0	97	21.1	459	100.0

DOMAIN 11 (General perception of patient safety)								
A10 – It is just by chance that more serious mistakes do not happen around here.	67	58.8	27	23.7	20	17.5	114	100.0
A15 - Patient safety is never compromised due to the greater amount of work to be completed.	16	13.9	22	19.1	77	67.0	115	100.0
A17 - In this unit we have patient safety issues.	24	20.5	22	18.8	71	60.7	117	100.0
A18 - Our procedures and systems are adequate to prevent errors from occurring.	63	53.9	24	20.5	30	25.6	117	100.0
Total	170	36.7	95	20.5	198	42.8	463	100.0
DOMAIN 12 (Frequency of event reporting)								
D1 - When an error occurs, but it is noticed and corrected before it affects the patient, how often is it reported?	46	40.7	29	25.7	38	33.6	113	100.0
D2 - When an error occurs but there is no risk of harm to the patient, how often is the patient notified?	37	33.0	40	35.7	35	31.3	112	100.0
D3 - When an error occurs, which could cause harm to the patient, but does not, how often is the patient notified?	56	50.0	39	34.8	17	15.2	112	100.0
Total	139	41.3	108	32.0	90	26.7	337	100.0
Total Overall	2.611	53.8	1.067	22.0	1.178	24.2	4.856	100.0

Figure 1

Positive, neutral, and negative responses, according to each safety culture domain. Fortaleza, CE, Brazil, 2018.



55.8% (n=192) of positive responses. The highlight of this category focused on the phrase 'In this unit, we discuss ways to prevent errors by preventing them from happening again', in which 70.4% (n=81) of the professionals agreed with this statement.

The 'openness for communication by professionals' presented 53.2% (n=182) of positive responses, in which 78.1% (n=89) of professionals stated that being free to say something that can negatively affect patient care, 50.4% (n=57) said they were not afraid to ask when something seems to be wrong, and only 31.3% (n=36) reported that they felt comfortable questioning superiors' decisions or actions.

The domain referring to 'Staffing' presented a higher percentage of negative answers, with 47% of the questions (n=218) and a low percentage of positive responses, obtaining only 34.9% (n=162) of the percentage. It is noteworthy that the item 'We have enough staff to handle the workload' was the one with the highest percentage of negative responses among the questions made by the instrument, with 86.2% (n=100) of the total responses.

It was observed that the domain 'Nonpunitive response to error' presented 57.8% (n=201) of negative responses. Among the domains highlighted here, this was the one with the lowest number of positive responses, with only 22.7% (n=79) of the questions. In this domain, 64.7% (n=75) of the professionals stated that they are concerned about the fact that errors can be used against them, and these are registered in the job records.

Domain 8, which describes management support to promote patient safety, obtained 55.1% (n=193) of positive responses. In this one, 63.8% (n=74) of the participants stated that the management treats patient safety as a priority and 56.4% (n=66) disagreed that the hospital management is only interested in safety when an event occurs.

Another factor evaluated in this study is the integration/teamwork between the hospital units, in which it was observed that more than half of the professionals evaluated this domain positively, with 57.9% (n=271) of the responses. In this evaluation, 67.5% (n=79) of the participants stated that the units work together to promote the improvement of patient care and 61.5% (n=72) reported satisfactory cooperation between them.

In addition to the points mentioned above, this research evaluated patient safety during shift changes and internal transfers, with a percentage of 56.9% (n=261) of favorable responses. Among the questions that make up this domain, 71.6% (n=83) of the participants disagreed with the statement that changes in shifts or shifts harm patients.

Regarding to the general perception of patient safety in the analyzed environment, there was a representative

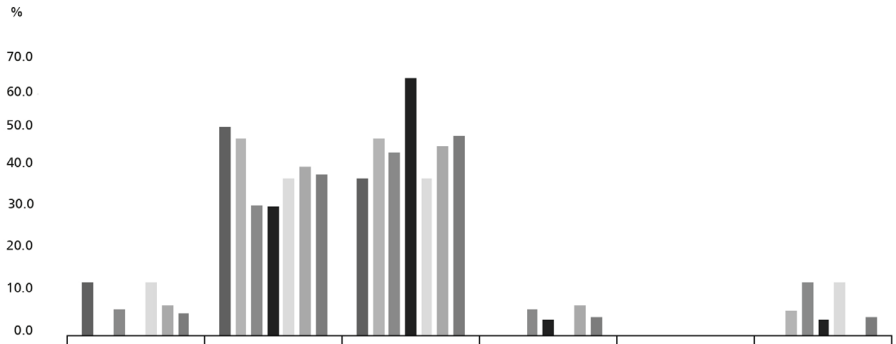
percentage of negative responses, with 42.8% (n=198) of the total of the questions, with two questions being decisive for this result, the first deals with the agreement about the compromise of patient safety to the detriment of excessive work, with 67% (n=77), and the existence of problems related to patient safety in the unit, with 60.7% (n=71).

The last point to be exposed deals with the frequency with which notifications are made, despite this domain having presented 41.3% (n=139) of positive responses, notifications of the events that occurred suffered variations according to the severity/damage that may occur to the patients. It was seen that when an error occurs that could cause harm to the patient, the percentage of notifications is higher, with 50% (n=56) of the participants stating that 'almost always' or 'always' these are notified. However, when this event is noticed and corrected before affecting the patient, the percentage dropped to 40.7% (n=46) and it was further reduced when the event did not have risks of harming the patient, with 33% (n=37).

Regarding the adverse events reported, as explained in Figure 2, we chose to show the distribution according to each professional category. Of the percentages presented, 67% (n=78) of the professionals stated that they never made a notification. Among the values referring to professionals, medical residents stand out, with 100% (n=8); physical therapists/speech therapists/occupational therapists, with 93.8% (n=15); and physicians, 88.5% (n=23) of responses in this option. It was observed that 47.1% (n=8) of nurses made three to five notifications, and of the 17 nurses participating in the study, 88% (n=15) said they had made one to more than 21 notifications.

Figure 2

Percentages of notifications, according to each professional category. Fortaleza, CE, Brazil, 2018.



	Excellent	Very good	Acceptable	Bad	Poor	No answers
SW / PHARM/ NUTRI/ PSY *	12.5 %	50.0 %	37.5 %	0.0 %	0.0 %	0.0 %
Nurse	0.0 %	47.1 %	47.1 %	0.0 %	0.0 %	5.9 %
Physio/ OT/ ST **	6.3 %	31.3 %	43.8 %	6.3 %	0.0 %	12.5 %
Doctor	0.0 %	30.8 %	61.5 %	3.8 %	0.0 %	3.8 %
Resident Doctor	12.5 %	37.5 %	37.5 %	0.0 %	0.0 %	12.5 %
Nursing Technician	7.1 %	40.5 %	45.2 %	7.1 %	0.0 %	0.0 %
Total overall	5.1 %	38.5 %	47.9 %	4.3 %	0.0 %	4.3 %

* Social workers/pharmacists/nutritionists/psychologists; ** Physiotherapists/occupational therapist/speech therapists.

Another important factor evaluated is the grade assigned to patient safety, divided into excellent, very good, regular, poor, very bad, according to the established instrument. As shown in Figure 3, the grand total indicates that 47.9% (n=56) of the professionals declared patient safety to be fair; 38.5% (n=45) very good; 5.1% (n=6) excellent; 4.3% (n=5) poor; and 4.3% (n=5) did not respond.

Cross-references were made between the numbers of positive responses, numbers of reported events and safety notes with data on workload, sex, age, working time in the hospital, in the unit and profession, noting the absence of values with statistical significance.

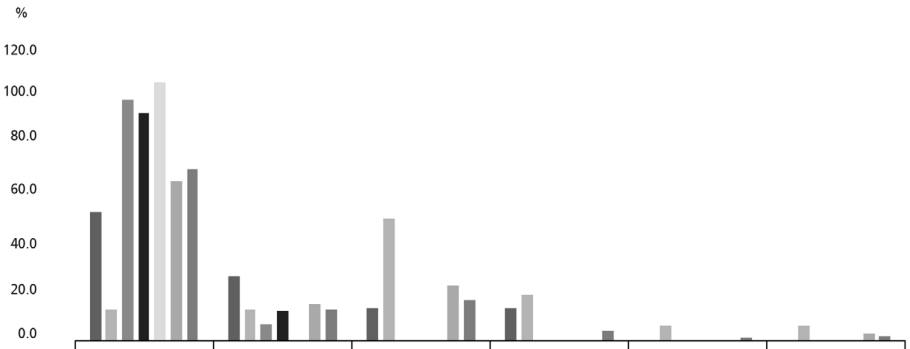
Discussion

Upon data analysis, there was a predominance of female participants, aged between 18 and 58 years old, mean age of 35.9 years and nine years of training. A study carried out in Brazil shows similarity in relation to sex and training time, but with divergence in relation to working time in the institution, in the unit and workload, with professionals having a longer bond and more weekly hours worked, when compared to the participants of this study.[12]

Organizational learning was the domain that had the highest percentage of positive responses, and in this way,

Figure 3

Safety note, according to each professional category. Fortaleza, CE, Brazil, 2018.



	No event reports	1 to 2	3 to 4	6 to 10	11 to 20	21 event reports or more
SW / PHARM/ NUTRI/ PSY *	50.0 %	25.0 %	12.5 %	12.5 %	0.0 %	0.0 %
Nurse	11.8 %	11.8 %	47.1 %	17.6 %	5.9 %	5.9 %
Physio/ OT/ ST **	93.8 %	6.3 %	0.0 %	0.0 %	0.0 %	0.0 %
Doctor	88.5 %	11.5 %	0.0 %	0.0 %	0.0 %	0.0 %
Resident Doctor	100.0 %	0.0 %	0.0 %	0.0 %	0.0 %	0.0 %
Nursing Technician	61.9 %	14.3 %	21.4 %	0.0 %	0.0 %	2.4 %
Total overall	67.0 %	12.0 %	15.0 %	3.0 %	1.0 %	2.0 %

* Social workers/pharmacists/nutritionists/psychologists; ** Physiotherapists/occupational therapist/speech therapists.

it was named as a potential area in the establishment of safety in the neonatal ICU studied. The aforementioned point deals with the evaluation of how errors generate positive changes for patient safety.[11] This result reveals that the events previously caused are processed and transformed into preventive and positive actions for the patient. A study carried out in Lithuania, in a hospital that provides obstetrics, gynecology and neonatology services, was similar to the present study, with a positive percentage of 73.2% in this same thematic area.[13]

Another highlight of this research was the 'Teamwork among units', with considerable levels of positive parameters. This data reveals the effective integration between the members of the multidisciplinary team, who stated that they worked together to obtain the best care for the patient, always prevailing respect, and support during the activities. Interdisciplinary work is defined by the integration of the actions of professionals in favor of the user's well-being, in order to contribute to a holistic approach to healthcare, through the constant exchange of experience and knowledge.[14] A study in Saudi Arabia found value for this domain lower than that found in this research, with 69.3% of affirmative answers.[15]

The 'expectations and actions of the supervisor to promote patient safety' showed a higher percentage of positive responses, but it was not established as an area of strength. According to this theme, most professionals disagreed with the question 'My supervisor/boss does not pay enough attention to patient safety problems which happens repeatedly', thus suggesting that those who take part of the leadership/supervision of these professionals are concerned with establishing a safe environment. A systematic review on the topic states that the involvement of managers in the process can influence the results and clinical performance of quality and safety.[16]

The performance of praise by the supervisor is presented as a question evaluated in this study, in which a considerable part of the professionals claimed to receive praise from their bosses when the work was performed with excellence. Praise is a primordial tool to stimulate workers' motivation, when carried out individually, demonstrating that the manager focused on the person and recognized the person's dedication.[17] In contrast to what was presented in this study, research carried out in an adult ICU showed that 70.18% of the professionals said they did not receive praise in the work environment.[12]

Domain 4, which deals with 'Feedback and communication about errors' was composed of mostly positive responses. The highlight of this category focused on the phrase 'In this unit, we discuss ways to prevent errors, preventing them from happening again', in which most professionals agreed with this statement, evidencing the concern about error prevention, through the debate in the workplace. A Brazilian study exposed 26.9% of favorable data in this domain, confirming failures in the feedback to professionals who carry out the communication of existing errors.[18]

Given the complexity of group work, effective communication is a highlight in the development of healthcare, as it is through this that a motivational and socialization environment is established among team members.[19] The opening for communication in the researched environment presented positive points for the establishment of a safety culture, with the majority of professionals stating that having the freedom to report when observing factors can negatively affect patient's care, half of them saying they are not afraid to ask when something does not seem right.

The work overload of neonatal ICU professionals was exposed in the 'staffing' domain, with significant rates of negative responses. In this item, the professionals highlighted not having enough staff for the tasks to be performed. It is emphasized that excessive work, double working hours, long hours and low pay are factors that propagate stress and have an impact on workers and damage to the quality of the service offered.[20]

Among the exposed domains, the 'Nonpunitive response to errors' presented the highest level of negative responses and the lowest number of positive responses. In this domain, professionals expressed concern about the fact that errors are used against them, and these are documented in the functional records. In the current literature, it was observed, in a study in Saudi Arabia, a percentage of positive responses were lower than those explained in this study, only 11.3%.[15]

Based on the theory of 'James Reason's Swiss Cheese',[1] in which the damage that affects the patient goes through a range of triggering processes and crosses several barriers, it appears that the error cannot be individualized, but considered by the system failures as a whole. The punitive culture can directly influence the communication of errors, causing professionals to be afraid to notify existing failures, thus leading to underreporting of cases.[1,21] Thus, it appears that, in the context studied, there is still the blame subject, requiring, therefore, a transition/modification of the culture of punishment for the establishment of learning through the analysis of existing errors.

To modify this scenario, strategies can be used, such as identifying problems that occur in the environment, instead of criticizing individuals, managers who act as agents of change and evaluate the team in a nonpunitive way, constantly evaluating the perception about the error punishment, and staff training/guidance on patient safety.[22]

Management support is essential for the establishment of a patient safety culture. This point obtained more than half of positive responses, participants stated that the management treats patient safety as a priority and disagreed that hospital managers are only interested in safety when an event occurs. Management included in the development of actions to promote a safe environment is essential to enhance protective barriers and thus reduce damage that may compromise the care process and patient care. In comparison with this study, a research carried out in a hospital in the South of Brazil showed 39.1% of affirmative responses, thus demonstrating a lower percentage than that found in this study.[23] This value may present discrepancies when compared between institutions, due to the singularities in the management in each hospital and in each location.

In the ninth domain, which discusses the integration among hospital units, more than half of the participants evaluated positively. This point refers to joint work and cooperation between units to promote improved patient care.[10] A study carried out in China, with 1,379 professionals from 19 hospitals, brought better results, with 65.3% of positive responses, evidencing more effective integration between units.[24]

Other critical moments in the establishment of patient safety refer to the shift change and internal transfers, with 57% of positive responses, which means that more than half of the participants consider these internal processes as effective. Regarding the analysis of intra-hospital transfers and shift change, in other countries, a study carried out in Morocco found 51.5% of positive responses, that is, close to what was found in this research. The authors of the aforementioned study point out that the percentage found was higher when compared to studies carried out in the United States and Lebanon.[25]

The general perception of patient safety showed a significant total of negative responses and few affirmative responses. In this domain, a considerable part of the participants agreed that the compromise of patient safety is related to excessive work and stated that in the investigated unit there were problems related to patient safety. It can be added that work overload is one of the main causes for the occurrence of adverse health events, directly interfering with patient safety.[19] In disagreement with the result presented in this domain, recent research carried out in Iran showed a high level of positive responses, signaling better aspects of error prevention and fewer problems with patient safety.[26]

The last domain exposed was 'frequency of event reporting', in which it was noted that despite this having a higher percentage of positive responses, the events that occurred underwent variations according to the severity/damage that these may occur to patients. When an error occurs that could cause harm to the patient, half of the participants stated that 'almost always' or 'always' these are reported. However, when the event is noticed and corrected before affecting the patient, this percentage is reduced and declines even further when the event does not have any risk of harming the patient. In the current

literature, there are divergent results on this point: one study presented a lower percentage,[18] others higher[13,15] and one study presented the same percentage as presented in this research.[27]

The total number of adverse events reported was also verified, it was observed that most professionals said they had not made reports, a recent survey in West Asia showed the same result.[26] Among the reasons for not reporting were fear of punishment, lawsuits, the lack of support from hospital management and the inability to detect adverse events.[28] As a positive point in the analyzed institution, the presence of an online notification system, in which professionals can communicate the adverse events in a confidential, accessible, and understandable manner.

It was also noted that most nurses made three to five notifications, and of the 17 nurses participating in the study, 88% said they had made one to more than 21 notifications. The view of nurses as responsible for this process can help other team members not to assume responsibility for reporting errors.[29]

Among the professional categories explained here, it was observed that neonatology residents never made notifications, indicating the need for greater training, awareness, and encouragement of this public to carry out notifications.

Regarding the score for patient safety, most professionals declared patient safety as fair or very good. In a hospital in Paraná, Brazil, professionals considered safety to be very good,[23] corroborating a study carried out in an international institution.[13]

As for the crossings performed, the professional aspects were not significant for determining the number of positive responses, the safety note and the number of notifications. Another study carried out in a neonatal ICU found relationships between the time working in the hospital and the time of activity in the unit with the number of positive answers, and professionals with less than one year in the institution/unit tended to have higher numbers of affirmative answers.[30]

The limitation of this study was the length of the questionnaire, which contributed to the professionals' refusal to fill it out and the team's lack of time.

The analyzes presented in this research brought an overview of the patient safety culture in the neonatal ICU with the multidisciplinary team, highlighting relevant points in the establishment of safe practices in newborn care in the evaluated context. The domains 'organizational learning - continuous improvement' and 'teamwork' were presented as areas of strength for the establishment of patient safety. It was also observed that the points referring to the non-punishment of the error and the staff were the ones that had the most percentages of negative responses.

This study contributes to change the scenario analyzed, suggesting changes mainly in aspects related to the punitive culture and evaluation of possible reduction of work overload to which the participants reported exposure. However, one cannot fail to emphasize the positive aspects found, such as teamwork, the concern of professionals and managers to bring improvements to promote patient safety and the continuous discussion to prevent errors, as the stimulus to the potentiation of these it is essential to ensure beneficial safety actions/behaviors to the neonate.

Authors' contribution

Ventura MWS and Lopes EM were responsible for the conception and study design, writing the article, analysis and interpretation of data, critical review of the intellectual content and final approval of the version to be submitted. Diógenes MS contributed to data collection and critical review of the article. Façanha APM and Néri EDR performed the critical review and writing of the article. All authors approved the final version of the article and declare no conflict of interest.

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Received on August 14, 2019

Final version presented on December 28, 2021

Approved on January 3, 2022