



# QUALITY TOOLS APPLIED TO THE EMERGENCY CAR CHECKING: MIXED METHODS RESEARCH

*Ferramentas da qualidade aplicadas à conferência do carro de emergência: pesquisa de métodos mistos*

*Herramientas de calidad aplicadas a la conferencia de carro de emergencia: investigación de métodos mixtos*

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Submitted on 07/15/2020.  
Accepted on 08/25/2020.

DOI: <https://doi.org/10.1590/2177-9465-EAN-2020-0274>

## ABSTRACT

**Objective:** to verify the causes of the not checking of the emergency car and the effect on the adherence rate by using quality tools in a Neonatal Intensive Care Unit. **Method:** mixed methods research of sequential exploratory design, developed with nurses and a documentary source in the Neonatal Intensive Care Unit of a university hospital, in three stages: 1) Brainstorming to survey the causes of not checking/ building a Checklist; 2) Data collection/analysis by applying the Pareto Checklist and Diagram; 3) Documentary analysis. The chi-square test was used to verify the effect of using quality tools in the adherence to checking. **Results:** 13 causes of not checking of the emergency car were identified, eight of which are preventable and five non-preventable. The preventable causes (n=63) represented 87.5%, the main ones being: lack of habit (n=17; 27%), prioritizing care activities (n=17; 27%), and dividing the care of patients / prioritize administrative activities (n=9; 14.3%). The application of quality tools had a significant effect (p-value <0.001) in the adherence to checking. **Conclusion and implications for practice:** the use of quality tools was feasible for the causal identification of the daily emergency car not checking and improvement in its adherence.

**Keywords:** Quality management; Quality of health care; Patient safety; Health management; Intensive care units, neonatal.

## RESUMO

**Objetivo:** verificar as causas da não conferência do carro de emergência e o efeito sobre a taxa de adesão, por meio do emprego de ferramentas da qualidade em uma Unidade de Terapia Intensiva Neonatal. **Método:** pesquisa mista do desenho exploratório sequencial, desenvolvida com enfermeiros e fonte documental na Unidade de Terapia Intensiva Neonatal de hospital universitário, em três etapas: 1) *Brainstorming* para levantamento das causas de não conferência/construção de Lista de Verificação; 2) Coleta/análise de dados pela aplicação da Lista de Verificação e Diagrama de Pareto; 3) Análise documental. Utilizou-se o teste qui-quadrado para verificar o efeito do emprego das ferramentas de qualidade na adesão à conferência. **Resultados:** 13 causas de não conferência do carro de emergência foram identificadas, sendo oito evitáveis e cinco não evitáveis. As causas evitáveis (n=63) representaram 87,5%, sendo as principais: falta de hábito (n=17; 27%), priorizar atividades assistenciais (n=17; 27%) e realizar divisão do cuidado dos pacientes/priorizar atividades administrativas (n=9; 14,3%). A aplicação das ferramentas da qualidade teve efeito significativo (p-valor<0,001) na adesão à conferência. **Conclusão e implicações para a prática:** o emprego das ferramentas da qualidade foi factível para a identificação causal da não conferência do carro de emergência e melhoria na sua adesão.

**Palavras-chave:** Gestão da qualidade; Qualidade da assistência à saúde; Segurança do paciente; Gestão em saúde; Unidade de terapia intensiva neonatal.

## RESUMEN

**Objetivo:** verificar las causas de la no conferencia del carro de emergencia y el efecto sobre la tasa de adherencia, mediante el uso de herramientas de calidad en una Unidad de Cuidados Intensivos Neonatales. **Método:** investigación de métodos mixtos de diseño exploratorio secuencial. Fue desarrollado con enfermeras y una fuente documental en la Unidad de Cuidados Intensivos Neonatales de un hospital universitario, en tres etapas: 1) *Brainstorming* (Lluvia) de ideas para estudiar las causas de la no conferencia y construir una Lista de verificación; 2) Recopilación/análisis de datos mediante la aplicación de la Lista de verificación y el Diagrama de Pareto; 3) Análisis documental. Se utilizó la prueba de chi-cuadrado para verificar el efecto del uso de herramientas de calidad en la adherencia a la conferencia. **Resultados:** se identificaron 13 causas de no conferencia del carro de emergencia, ocho eran prevenibles y cinco no prevenibles. Las causas evitables (n=63) representaron el 87,5%, siendo las principales: falta de hábito (n=17; 27%), priorizar las actividades de atención (n=17; 27%) y realizar la división de la atención a los pacientes/priorizar las actividades administrativas (n=9; 14.3%). La aplicación de herramientas de calidad tuvo un efecto significativo (p<0.001) en la adherencia a la conferencia. **Conclusión e implicaciones para la práctica:** el uso de herramientas de calidad fue factible para la identificación causal del control no diario del carro de emergencia y en la mejora de su adherencia.

**Palabras clave:** Gestión de la calidad; Calidad de la atención de salud; Seguridad del paciente; Gestión en salud; Unidades de cuidado intensivo neonatal.

## INTRODUCTION

The incessant search for good practices in health care combined with the need to offer services with quality and safety and the growing competitiveness of today's market tend to drive organizations, especially hospitals, to seek quality programs. Such programs allow to increase the management of care and improve the efficiency of services based on pre-established standards and the application of concepts, techniques and tools proper to the quality management model.<sup>1,2</sup>

In the health area, the quality management aims to make possible the permanent education of professionals throughout the organization aligned with a rational work logic. Moreover, it seeks to continuously manage indicators that subsidize the monitoring of organizational performance and assistance and management results, aiming at its improvement.<sup>1,2</sup> In this way, the rationalization of work processes has been evolving, which culminates in the identification of criteria, indicators and standards increasingly advanced for various services, including nursing.<sup>3</sup>

For the implementation of quality management, tools and methods must be used to evaluate reality and make rational decisions based on solid information.<sup>1</sup> Quality tools are important mechanisms for achieving the desired objectives and are used in the approach to quality as facilitators of analysis and/or intervention in diverse situations. Thus, their use can represent the starting point for the improvement and reduction of costs and risks, leveraging assertiveness in problem solving.<sup>4</sup>

There are several quality tools that can be used in different work processes, such as: Flowchart, Checklist, Control Chart, Pareto Chart, Cause and Effect Diagram ("fishbone"), 5W2H (*What, Who, When, Where, Why, How Much*), SWOT (*Strengths, Weaknesses, Opportunities, Threats*) matrix/analysis, Histogram, Scatter Diagram, GUT (Gravity, Urgency and Trend) Matrix, among others.<sup>4,5</sup> In this scope, the quality manager is the elementary agent in the process of managing policies, strategies and quality evaluation, in order to define goals and strategies compatible with resources and organizational interests, as well as in the choice of appropriate tools for this.<sup>2,5</sup>

The possibilities of using quality tools are wide, and what matters, in fact, is their rational and strategic applicability in search of continuous improvement.<sup>4,5</sup> Having said that, in nursing services, which permeate most of the assistance activities in the hospital environment, their application is of vast possibility, prevailing the precision of their use towards the best direct care and solid contributions for the management in health and nursing.<sup>1,3</sup>

In hospitals, assembly, checking and maintenance of the emergency car is a recurring problem in emergency care. This is relevant for the nursing team, because among the professionals of this class, including those who work in the Intensive Care Unit (ICU), most of them are recognized as responsible for checking and "management" of the emergency car, a fact that does not exclude the interdisciplinary responsibility that the emergency

situations demand.<sup>6</sup> In neonatal ICU this is no different, because the nurses who work in these environments, besides extensive humanization, are required skills that are convergent for the management of care so peculiar and complex.<sup>7</sup>

With regard to the role of the nurse, a recent welfare protocol mentions him as responsible for organizing the emergency car, assigning to this professional the following activities: elaborate the scale of service for cleaning, perform the functional testing of the laryngoscope and defibrillator, check the seals of the emergency car, monitor the presence, quantity and validity of materials on checking form and replace the drugs and materials that were used.<sup>8</sup> In addition, low adherence to the emergency car's daily checking routine may have negative repercussions on the quality of health care, such as, for example, the commitment to cardiopulmonary arrest (CRA) care to the patient due to the absence and/or inefficacy of materials and medications, and/or lack of proper functioning of the equipment.<sup>9-11</sup>

This study is justified because it allows us to understand the problem related to the adherence to the emergency car checking practice through quality tools, which is relevant and innovative, since such tools enable concrete improvements applicable to the reality of health work. Therefore, the systematic use of the quality tools disclosed in research can be linked to the translation of scientific knowledge into practice, in this case, especially management.

The scenario explained culminated in the following questions: What are the causes for not attending the emergency car checking in a Neonatal Intensive Care Unit? What is the effect of the application of the quality tools on the rate of adherence to this checking? Therefore, the objective was to verify the causes of not checking of the emergency car and the effect on the adherence rate to checking by using quality tools in a Neonatal Intensive Care Unit.

## METHOD

An evaluation study of a health quality improvement strategy whose description met the standards of the *Standards for Quality Improvement Reporting Excellence (SQUIRE Guidelines)*.<sup>12</sup> In relation to the methodological design, this is a mixed method research anchored in the sequential exploratory design. This study design is carried out by a first qualitative stage: data connection - between the qualitative data analysis end and the quantitative data collection - and subsequent quantitative stage, besides the final joint analysis.<sup>13</sup>

According to the chosen methodological reference, in the sequential exploratory strategy, more weight can be given to the qualitative or quantitative approach; however, the qualitative approach is characterized as the preliminary in the temporal/sequential space.<sup>14</sup> In this study, it was opted for the attribution of quantitative weight, respecting the sequencing procedure (which is → QUAN) foreseen.<sup>13,14</sup> This option was made because

the density of quantitative data was higher to meet the objective of the study, including the term effect labeled there.

In the nursing area, the sequential exploratory design in mixed-method research is powerful for subjectively raising the understanding of phenomena, objectifying them in some way (including construction of products/instruments) and later analyzing them by the ruler of metrics.<sup>14</sup> This mechanism of objectifying subjectivity is what understood the integration of data in this mixed study, defined by construction (type of connection).<sup>13,14</sup>

The study was carried out at a public university hospital, located in the state of Mato Grosso, Brazil, between November 2017 and February 2018. The hospital has 118 beds and six operating rooms, besides outpatient care for more than 30 medical specialties, totally linked to the Unified Health System.

The research took place at the Neonatal Intensive Care Unit (NICU) of the referred hospital, which has 10 beds and had 15 nurses. The unit was intentionally chosen due to the high need of using the emergency car in relation to the other hospitalization units, in which the patients have greater clinical stability.<sup>15</sup> The unit has two emergency cars.

The hospital has 17 units with emergency cars, all equipped and standardized as to their internal organization, with the following characteristics: 1st drawer for medication; 2nd drawer for venous access material; 3rd drawer for airway material; 4th drawer for parenteral solutions. All drawers must remain sealed. In addition, the cars have external materials - top tray, defibrillator, laryngoscope and blades, oxygen cylinder and manual resuscitator ("Ambu"). The daily checking by the nurse concerns the external materials and seals of the drawers and is standardized in the institution.

For participation in the study, only NICU nurses who worked in the direct care of the patient were included, excluding those who were absent from work for any reason and who exclusively performed managerial activities. Of the 15 professionals in the unit, 14 (93.3%) agreed to participate and signed the Free and Informed Consent Term (TCLE). The data collection took place in three duly connected stages, as foreseen by the methodological reference used,<sup>13,14</sup> namely:

**1st Step:** Survey of the causes of not checkin of the emergency car: for this we used *Brainstorming*, which is a method that supports the use of quality tools to generate ideas in groups in a short time.<sup>5</sup> This was the first stage of the study - qualitative (which) - respecting the methodological reference,<sup>13</sup> under the understanding that there was evocation of the causes of not checking by the nurses, i.e., by its uniqueness, through this eminently communicative process that is the Brainstorming.

Due to the complexity of the unit, it was not possible to gather the team in a single meeting for *Brainstorming*, being necessary to hold three meetings with at least three participants in each and of average duration of 20 minutes. During Brainstorming,

the guiding question used was: "What are the causes for not attending the emergency car checking? After listing the causes for non-adherence, the nurses were asked which causes they considered avoidable and unavoidable for non-adherence to the emergency car check. This process was recorded in audios which were later revisited by the researchers.

Avoidable causes are those on which participants have direct governability in resolution, and non-avoidable causes refer to those they cannot avoid because they depend on other services/professionals/institution or other processes outside their governability.<sup>16</sup> The causes were therefore previously dichotomized ("categorized") in this scope (avoidable/non avoidable), following the organization of the problem axis that the cause and effect diagram enunciate by the logic of not adhering to the car check as effect/problem.<sup>4</sup> This was used as a guide for the analysis of the first stage, and this organization was legitimized/validated by the nurses, that is, the professionals were consulted on the classification of the proposed causes, obtaining full agreement.

**2nd Step:** Collect and analyze data in loco: after identifying the causes, a Checklist was constructed consisting of a planned form, in which from the recorded data one can have a perception of reality.<sup>4,5</sup> The list was used as a quality tool for data collection, consisting of causes related to not checking of the emergency car. Thus, as the list was constructed based on what was evoked by the nurses, it corresponded to the connection (by construction) of data expected from the research with mixed methods in the sequential exploratory design.<sup>13</sup>

At this step, in the month of February 2018, a single researcher employed, through direct observation, the Daily Checklist to find out the frequency of occurrence of the causes of daily not checking of the emergency car, one hour after the beginning of each shift. When observed the emergency car's not checking, the shift nurse was asked to list the cause of this nonconformity according to the causes that were on the Checklist previously agreed to by the interested parties.

The Pareto Diagram was then used to analyze the data collected by the Checklist application by identifying the causes that contributed to approximately 80% of the emergency car's daily not checking. It is a quality tool that presents the items and classes, in the order of the numbers of occurrences, presenting the accumulated frequency, which allows the visualization of the causes and helps in the determination of priorities.<sup>5</sup> Therefore, this step started the procedures of quantitative analysis (QUAN) of the mixed research, connected to the previous step (which).

All data collected has been transposed into *Microsoft Office Excel®* software spreadsheets, version 2013. The tabulated data were analyzed in descriptive statistics, in measures of percentage proportion.

**3rd Step:** Documentary analysis: a documental survey was made of the adherence to the emergency car checking between the months of January and May 2018 to verify how the checking indicator (adherence) of the emergency car behaved. This survey was carried out using the unit’s own forms, which make up five check items and are filled in every shift daily by the nurses in the sector and forwarded to the hospital’s Quality Management Service. As this process was subsequent to the qualitative stages of evocation of the causes of non-adherence to the check and in loco verification of this adherence through the Checklist built, it was understood that the 3rd stage was also connected to the sequential mixed exploratory study.<sup>13</sup>

The calculation of the adhesion rate was made by multiplying the number of items to be checked (in this case, five in total), with the total of on duty shifts (three shifts - morning, afternoon and night) and days of the current month. The product of this operation consists of the number of checking required in the analyzed month. By counting the number of checking actually held, the percentage of checking adherence was obtained. It is worth pointing out that

in the process of document analysis of the adhesion to checking of the emergency cars, the adhesion rate was obtained by the average between the two cars disposed in the NICU.

Still in the third stage, the *Statistical Package for the Social Sciences* performed the chi-square test to verify if the application of the quality tools had a significant effect on the rates of adherence to the emergency car checking. For this, the adhesion rates of three months subsequent to the month of February (month of application of the tools) were compared with the adhesion rate of January (month before the application). In this analytical process, the difference expressed by p-value ≤ 0.05 was considered statistically significant.

The research complied with all national ethical requirements governing studies involving human beings. About this, it is registered through CAAE protocol number: 78569417.7.0000.5541 and institutional ethical opinion N. 2.353.036/2017.

## RESULTS

In the first stage of the study (qualitative), through Brainstorming, 13 self-reported causes were identified by nurses for the not

**Chart 1.** Classification and definition of self-reported causes by nurses of not checking of emergency cars in the Neonatal Intensive Care Unit. Mato Grosso, 2018.

Causes	Rating	Definition
1. Accompany newly admitted professional	Preventable	Develop integration of new professionals on the sector routine.
2. Absence of training in the emergency car checking process	Preventable	Recently admitted professional with difficulty in handling the defibrillator.
3. Discontinuity in the emergency car checking routine	Preventable	Absence of registration of previous duty and receipt of duty with the emergency car open.
4. Failures in the scale of work	Preventable	Failure of the professional during the elaboration of the scale, causing defalcation in the team.
5. Lack of habit	Preventable	Forgetting the professional to hold the daily emergency car checking, right after receiving the duty.
6. Prioritize administrative activities	Preventable	Failure to plan materials for daily consumption leads to the need for displacement of the nurse.
7. Prioritize nursing care activities	Preventable	Perform activities such as: newborn baths, venipuncture, dressings and analysis of medical records, among others.
8. Carrying out patient care division	Preventable	Distribution of patients among professionals at the beginning of the shift.
9. Inadequacy of nursing staff	Preventable	Insufficient number of professionals in the sector.
10. Lack of drugs and materials	Preventable	Absence of medication and/or materials in the hospital.
11. Intercurrence with patient	Preventable	Need to attend urgencies and/or emergencies.
12. Administrative interurrences with team	Preventable	Last minute notice or medical certificate delivery. Professional who arrives late for duty.
13. Overcrowding	Preventable	Number of patients hospitalized greater than the number of vacancies offered by the unit.

Source: Research data, 2018.

checking of the emergency car. Of these, eight were classified as avoidable causes and five as non-preventable causes, as presented in Chart 1.

In the second stage of the study, with the *in loco* application of the Checklist (built based on the 1st stage, therefore connected) in the month of February 2018, it was possible to verify that there were 72 occurrences of not checking of the emergency car. Of this total, 63 (87.5%) were from preventable causes and nine (12.5%) from non-preventable causes.

Considering that the non-preventable causes were outside the governability of the NICU nurses, we sought to analyze the data of the preventable causes in order to obtain a better understanding of their occurrences, and how they contributed to the not checking of the emergency car. Thus, occurrences of preventable causes were listed, in descending order, distributed in absolute frequency, relative frequency in percentage and cumulative relative frequency in percentage, as shown in Table 1.

After surveying the frequencies of occurrence of preventable causes, still in the second stage of the study, the Pareto Diagram was elaborated, in order to highlight those that contributed in an accumulated way for approximately 80% of the daily not checking of the emergency car. Figure 1 presents the Pareto Diagram with the preventable causes of not checking of the emergency car.

It was verified that four preventable causes were responsible for 82% of not checking the emergency car, being them, lack of habit, to prioritize assistance activities, to carry out division of the care of the patients and to prioritize administrative activities.

Regarding the third stage of the study, Table 2 presents the monthly frequencies of adherence and non-adherence to the daily documented checking of the emergency car in the studied environment, as well as the p-value of the chi-square test for comparison.

The results presented in Table 2 show that there was an improvement in the adherence rate after the application of the Checklist, going from 75.3% in January ("before") to 97.4%

in February (month in which the quality tool was used). It can be seen that in the months following the month of February the adherence rates decreased from 95.1%, 92.2% to 86.2% in March, April and May, respectively, which shows that the presence of *on-site* verification was the determining factor for the best adherence to the emergency car checking. However, according to the chi-square test, it can be observed that the application of quality tools interfered positively and significantly ( $p$ -value < 0.001) between the months researched.

## DISCUSSION

The standardization of emergency cars seems to favor the organization as to the content and quantity of materials in the different units, with the purpose of facilitating the emergency care and establishing the daily checking process. However, it is known that adherence to daily checking is an action that can be influenced by multiple facets. Examples of this are the very causes of not checking referred to by nurses.

A study developed in a hospital specialized in cardiological care in the state of São Paulo showed that familiarization with the emergency car can influence the quality of care.<sup>15</sup> In this aspect, the importance of continued and permanent education programs is reinforced, as well as the establishment of an efficient system for monitoring adherence to the emergency car checking.

Although there is contradiction in relation to the effect of educational actions on behavior at work, since some authors defend the change of behavior mediated by the accumulation of knowledge and others say that knowledge does not lead to behavior change, it is necessary to emphasize that there is need for greater investment of the organization through strategies for leadership development and academic and professional training that contribute to strengthening adherence to good practices.<sup>17,18</sup> This is relevant in hospital environments, because the complexity of care undeniably imposes risks to

**Table 1.** Frequency of occurrence of preventable causes (n=63) of daily not checking of emergency cars in the Neonatal Intensive Care Unit. Mato Grosso, 2018.

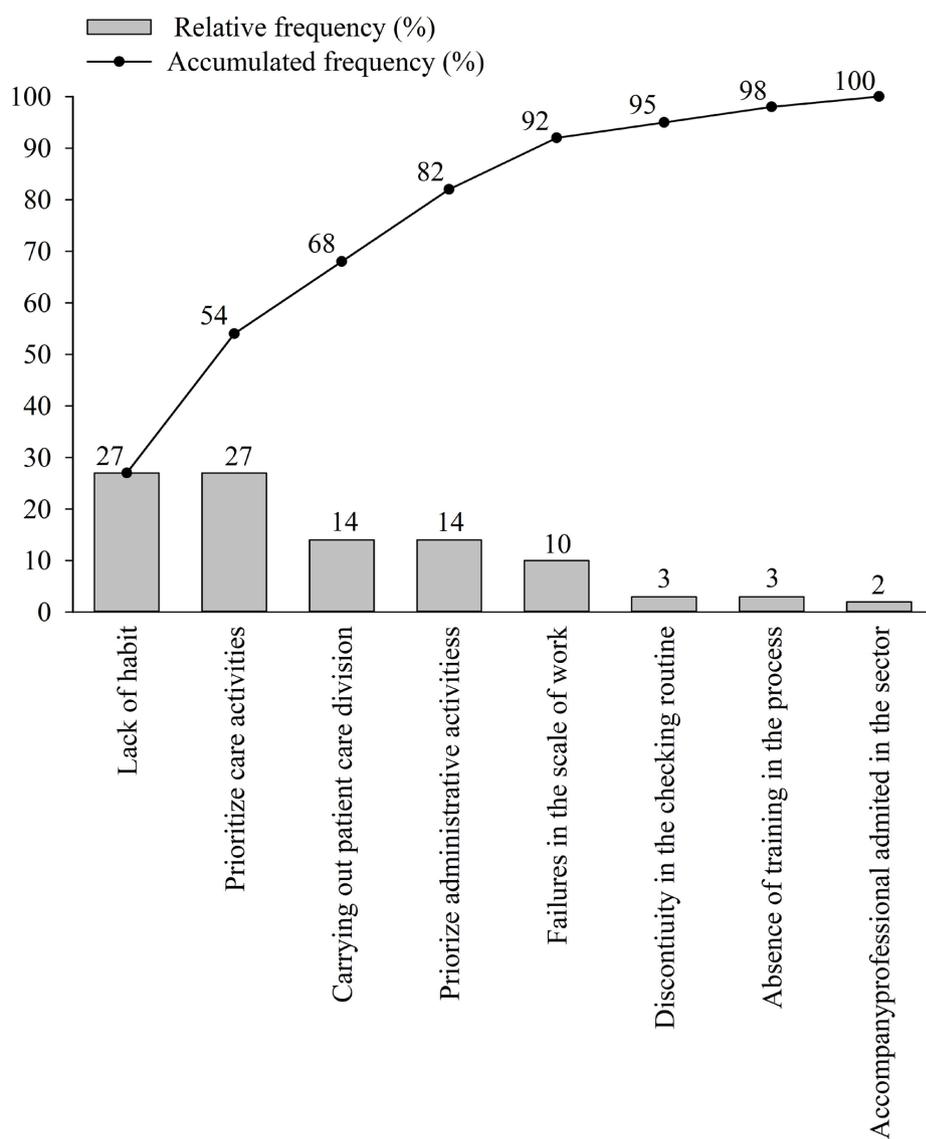
Avoidable causes	n	%	Accumulated %
Lack of habit	17	27	27
Prioritize assistance activities	17	27	54
Carrying out patient care division	9	14	68
Prioritize administrative activities	9	14	82
Failures in the scale of work	6	10	92
Discontinuity in the checking routine	2	3	95
Absence of training in the process	2	3	98
Accompany professional admitted in the sector	1	2	100
<b>Total</b>	63	100	-

Source: Research data, 2018.

**Table 2.** Adherence and non-adherence to the emergency car checking, by month, and effect of the quality tools on the adherence to the emergency car checking in the Neonatal Intensive Care Unit. Mato Grosso, 2018.

Month	Join		Non-Adherence		Total		p-value*
	n	%	n	%	n	%	
January	350	75.3	115	24.7	465	100	-
February	409	97.4	11	2.6	420	100	-
March	442	95.1	23	4.9	465	100	< 0.001
April	415	92.2	35	7.8	450	100	< 0.001
May	401	86.2	64	13.8	465	100	< 0.001

\*Chi-square test carried out to compare the adhesion rate of the respective month with the month of January (before the application of the quality tools, in February). **Source:** Research data, 2018.



**Figure 1.** Pareto diagram of preventable causes (n=63) that interfered with the daily not checking of emergency cars at the Neonatal Intensive Care Unit, Mato Grosso, 2018.

Source: Research data, 2018.

the patient, which requires broad and continuous professional development, including in nursing care actions in emergencies.

The results found showed a high rate of non-adherence to the emergency car check for preventable causes (87.5%), with the possibility of governability over them by nurses. When finding that avoidable causes are so superior to those not preventable for the emergency car check, it is important to reflect on the role of the nurse in the dynamics of hospital work. This is because, considering that checking this device is fundamental for the efficiency of emergency care, it is deduced that it is a care management action, inherent to the professional identity of the nurse.<sup>19</sup>

The forgetfulness denotes the lack of habit and the prioritization of welfare and administrative activities, it relates to aspects that perhaps reveal the organizational culture regarding the work of the nurse. The culture is related to the informal element of the organizations and, in relation to the identified causes, it can be said that they are part of a set of meanings shared by the professionals of this unit, which is configured as a collective characteristic of the researched population. Not less important, in a more global way, the not checking of the emergency car denotes devaluation of positive culture to the patient's safety, because this is a product of individual and collective attitudes of aspects that involve (un)safe care.<sup>20</sup>

It is worth mentioning that other studies on adherence to safe practices point out forgetfulness and lack of habit as causes of low adherence of professionals, which occurs both in the worker's and patient's safety measures, referring to the association with cultural elements imbricated in the process.<sup>21,22</sup>

In relation to the cause of "prioritizing assistance activities" identified, it is postulated that the nurse, when assuming the work shift and choosing to perform nursing procedures that could be delegated to other team members, would be adopting a standard of practices agreed upon in that unit or institution. In this case, by introducing a new work process, the daily emergency car checking, the group seems to encounter difficulties in establishing a new work organization/routine.

It is important to emphasize the cause of "performing the division of patients" as a reason for not adhering to the emergency car check, because it is known that even if this activity of the nurse is in fact not delegable to another member of the team, it tends to be of quick execution. Thus, it is considered that even punctuating this action as a cause of not conferencing can be, in itself, a problem.

The daily emergency car checking process is a good practice aspect and aims at improving and organizing the work process, but it requires commitment from the professionals involved and building new organizational values. These values can be considered as formative aspects of the organization basis and of positive changes in the daily behavior of professionals.<sup>23</sup>

Quality management tools in health care organizations assist in the investigation of incident-related causes, in addition to facilitating improvement interventions.<sup>4</sup> These tools are

also used in the hospital environment to increase internal processes and, consequently, improve hospital management performance and positive impacts on patient satisfaction.<sup>5,24</sup>

In this study, the use of the Checklist, besides collecting data, seems to have worked as an intervention tool, because it is evident that in the month of its application the result of adherence to the emergency car checking was more satisfactory. It is considered important that the institution uses tools that really add value to the performance of the professionals and to the proposed objective and that can be used naturally in the work environment.<sup>25</sup>

In a recent U.S. study, it was shown that there was a lower mortality rate of hospitalized patients during weeks of inspections by an accrediting organization, suggesting that changes in practice that occur during auditor observation periods may significantly affect patient mortality.<sup>26</sup>

In view of the above and the results of the research, one tends to the idea that direct follow-up in health work seems to be relevant to the quality of care and safety of the patient. However, it is believed that even with the possible benefits of direct supervision and evaluation, it is equally important that workers increasingly internalize practices, tools and means that leverage the quality of care independently/autonomously through participatory and strategic management practices.

It agrees with the previous assumption made in Iran<sup>27</sup> that the objective was to improve the documentation of nursing care in an emergency room and, with the result of a 32% increase in the quality of records, inferred that the appropriate practices to improve the documentation of nursing care include the effective participation of employees, management responsibility, adherence of nurses to documentation standards and improved leadership style, in addition to the due continuous monitoring.

The quality tools adopted were appropriate and sufficient to identify the causes that interfere with the carrying out of the emergency car checking. *Brainstorming* allowed the creation of a space for ideas and discussion among the participants and made it possible to survey the causes that interfere in this process, until then unknown, being configured as a technique that can be used to subsidize the use of other tools. The Checklist facilitated the organization of data collection and made it possible to quantify the occurrence of causes of non-adherence, leading to an immediate interpretation of the situation, which was clarified by the Pareto Diagram. In other words, the set of quality tools was useful and consistent with a common purpose, ratifying its management role focused on improvements.

It is important to emphasize the need for specific training for the proper use of quality tools, in order to incorporate them rationally, as well as be included in the organizational values of the institution as a reflection of good management practices.

Through the mixed research approach and the totality of data density that, even with the quantitative preponderance, were interdependent, it is believed that the study reinforces that issues that demand managerial intervention in the work process

are strengthened when in the active participation of the subjects involved. In other words, although in quality management it is fundamental to measure aspects inherent to the work so that improvements are planned and implemented, when considering the uniqueness of the subjects, it is believed that this process can become both more humanized and more effective.

## CONCLUSION AND IMPLICATIONS FOR PRACTICE

It is concluded that the use of quality tools was feasible for the verification of the causes of not checking of the emergency car and interfered positively in the improvement of its adherence. Moreover, the study allowed to identify the main causes of not checking of the emergency car, which are: lack of habit, prioritize care activities, carry out division of care of patients and prioritize administrative activities.

Despite its limitations in relation to descriptive design and geographical restriction, it is believed that the study contributes to reinforce the use of strategic tools in a rational way to improve hospital quality. The causes raised for the non-adherence seem to have ample space for revision, since they were classified, in its majority, as preventable. This raises discussions about the role of the nurse in care management.

## AUTHOR'S CONTRIBUTIONS

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