

CHALLENGES TO PATIENT SAFETY IN CARDIOPULMONARY REANIMATION IN A HOSPITAL EMERGENCY SERVICE

DESAFIOS À SEGURANÇA DO PACIENTE NA REANIMAÇÃO CARDIOPULMONAR EM UM SERVIÇO DE EMERGÊNCIA HOSPITALAR

RETOS PARA LA SEGURIDAD DEL PACIENTE EN LA REANIMACIÓN CARDIOPULMONAR EN UN SERVICIO DE URGENCIAS HOSPITALARIA

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Objective: To understand the challenges related to patient safety during cardiopulmonary arrest care in the emergency department of a federal teaching hospital in southern Brazil. **Method:** This is a quantitative and qualitative study with data collected between March and April 2023. Thirty questionnaires were administered to professionals immediately after resuscitation actions, recording impressions and challenges in the processes from the perspective of those involved. Quantitative analysis was performed using descriptive statistics, and qualitative data were grouped by thematic similarity. **Results:** The challenges listed were communication problems (66.67%), conduct errors (33.33%), delays in medication administration (30%), and time counting errors (23.3%). **Final considerations:** Communication emerged as a critical factor permeating all challenges encountered. The need for adherence to advanced life support guidelines, team training, and the development of technologies to facilitate communication during resuscitation were observed.

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Descriptors: Cardiac Arrest. Patient Safety. Hospital Emergency Services. Cardiopulmonary Resuscitation. Patient Care Team.

Objetivo: conhecer os desafios relacionados à segurança do paciente durante o atendimento à parada cardiorrespiratória ocorridos em um serviço de emergência de um hospital federal de ensino do sul do Brasil. Método: trata-se de um estudo quanti-qualitativo, com dados coletados entre março e abril de 2023. Foram aplicados 30 questionários aos profissionais logo após as ações de ressuscitação, que registrou impressões e desafios nos processos pela ótica dos envolvidos. A análise quantitativa foi realizada por meio de estatística descritiva e os dados qualitativos agrupados por semelhança temática. Resultados: os desafios elencados foram problemas de comunicação (66,67%), erros de conduta (33,33%), atraso na administração de medicações (30%) e erros na contagem de tempo (23,3%). Considerações finais: a comunicação emergiu como fator crítico permeando todos os desafios encontrados. Observou-se a necessidade de aderência às diretrizes de suporte avançado de vida, capacitação da equipe e desenvolvimento de tecnologias que facilitem a comunicação na ressuscitação.

Descritores: Parada Cardíaca. Segurança do Paciente. Serviço Hospitalar de Emergência. Reanimação Cardiopulmonar. Equipe de Assistência ao Paciente.

Objetivo: Comprender los retos relacionados con la seguridad del paciente durante la atención del paro cardiorrespiratorio en el servicio de urgencias de un hospital federal docente del sur de Brasil. Método: Estudio cuantitativo y cualitativo con datos recopilados entre marzo y abril de 2023. Se aplicaron treinta cuestionarios a profesionales inmediatamente después de las maniobras de reanimación, registrando las impresiones y los retos en los procesos desde la perspectiva de los involucrados. El análisis cuantitativo se realizó mediante estadística descriptiva, y los datos cualitativos se agruparon por similitud temática. Resultados: Los retos identificados fueron problemas de comunicación (66,67%), errores de conducta (33,33%), retrasos en la administración de medicamentos (30%) y errores de sincronización (23,3%). Consideraciones finales: La comunicación se identificó como un factor crítico que permea todos los retos encontrados. Se observó la necesidad de adherencia a las guías de apoyo avanzado de vida, capacitación del equipo y el desarrollo de tecnologías para facilitar la comunicación durante la resucitación.

Descritores: Paro cardíaco. Seguridad del paciente. Servicios de urgencias hospitalarias. Reanimación cardiopulmonar. Equipo de atención al paciente.

Introduction

Patient safety (PS) in healthcare services has been a global concern in recent decades. The topic gained prominence after the publication of the report “To Err is Human: Building a Safer Health System” by the Institute of Medicine (IOM) in 1999. This document addressed the issues of medical errors and patient harm in healthcare and initiated the development of global actions on the topic⁽¹⁻²⁾.

Patient safety is understood as the set of organized activities aimed at creating cultures, processes, procedures, behaviors, technologies, and environments in healthcare, with the purpose of consistently and sustainably reducing risks. Furthermore, it seeks to reduce the occurrence of preventable harm, make errors less likely, and mitigate the impact of harm when it does occur⁽³⁾.

The 72nd World Health Assembly, in its report number 72/31, of April 8, 2019, calls

on all countries to evaluate and develop their emergency care systems to ensure timely care for the seriously ill and injured and achieve universal health coverage. To achieve this, it is necessary to create mechanisms to improve coordination, quality and safety in emergency care⁽⁴⁾.

In the emergency department (ER) setting, cardiorespiratory arrest (CRA) is one of the most complex care provided by the multidisciplinary team, given that it demands agility and rapid, effective decision-making. It can occur at any time, especially in large hospitals. Therefore, this type of care can trigger greater risks for errors and adverse events⁽⁵⁻⁶⁾.

It is worth noting that CRA is a highly prevalent cardiovascular emergency with high morbidity and mortality. CRA is understood as the cessation of circulation and is generally caused by cardiac arrhythmias resulting from

cardiovascular problems. It is estimated to be responsible for 15% to 20% of natural deaths in the United States and Western Europe⁽⁷⁾. The survival rate for in-hospital CRA varies greatly between institutions and is related to rapid recognition and initiation of defibrillation and resuscitation maneuvers. Because it is a dynamic event, it requires timely intervention by highly qualified professionals who utilize effective communication and teamwork⁽⁸⁻⁹⁾.

To meet the demands of organizations and agencies and provide guidelines and standards for cardiac arrest care, the first textbook, Advanced Cardiac Life Support (ACLS), was published by the American Heart Association (AHA) in 1975⁽¹⁰⁻¹¹⁾. Early initiation of quality resuscitation and early administration of epinephrine have been shown to improve patient outcomes. Resuscitation actions that do not follow international recommendations are common in in-hospital cardiac arrest cases and can negatively affect patient survival^(7,9).

The specificities of care associated with team stress can lead to errors and patient safety issues during cardiac arrest, such as communication failures, time counting and medication administration errors, and delayed defibrillation⁽¹²⁾.

Little is discussed in the literature about patient safety during cardiopulmonary resuscitation; however, this gap is even greater when it comes to the challenges professionals face during this type of care, which jeopardize patient safety. The relevance of this study lies in identifying problem areas and opportunities for improvement in cardiorespiratory arrest care from the perspective of emergency department professionals. This will enable the development of future strategies for quality improvement, directly affecting the safety of patients treated in this service.

Therefore, this study aimed to understand the challenges related to patient safety during cardiorespiratory arrest care in an emergency department of a federal teaching hospital in southern Brazil.

Method

This is an exploratory, descriptive field study with a quantitative-qualitative approach, guided by the Standards for Reporting Qualitative Research (SRQR). This is an excerpt from an applied research project focused on the technological development of a Minimum Viable Product (MVP) to assist with in-hospital cardiac arrest care, using a philosophical approach of Design Thinking (DT), as part of the thesis for the Graduate Program in Nursing Care Management – Professional PhD.

The research was conducted in an adult Emergency Care Unit of a Federal Public Teaching Hospital affiliated with the Ministry of Education, with the unit's multidisciplinary team of 131 professionals as its population. The inclusion criteria for participation were: being a registered nurse, nursing technician, physician, or nursing or medical resident assigned to the emergency care unit. This selection was made because these are the only professionals who work directly in cardiorespiratory arrest care. Professionals on leave from their jobs for any reason were excluded from the study. Of the total number of professionals, 119 met the inclusion criteria. Participants were informed that the study was risk-free and that they could withdraw from participation at any time.

The researcher had worked as a clinical nurse in the Emergency Department for 11 years, being part of the unit's multidisciplinary team and having a professional relationship with the study participants.

For data collection, a self-administered questionnaire was developed, structured in three parts: one to characterize the professionals, another related to cardiorespiratory arrest care and the last for comments the participant deemed relevant, to gather the challenges encountered in this care. Regarding the characterization of the professionals, the questions included function, age, gender, time since graduation, time working in emergency services, and time working in the emergency service under study. Regarding cardiorespiratory arrest care, two questions were

asked: *What patient safety problems occurred during cardiorespiratory arrest care?* One or more options could be selected: time counting errors, medication errors, conduct errors, delays in medication administration, delays in defibrillation, communication problems, and others (with space for open-ended responses); *Did you experience any difficulties during cardiac arrest care with regard to materials and equipment, space, multidisciplinary team, or others?* You could choose “yes” or “no,” with space for a statement if answered “yes.”

Self-administered questionnaires were used to avoid conflicts of interest or embarrassment during participant completion.

Data collection took place in March and April 2023. Professionals were invited to participate in the study by verbal invitation, which was reinforced via WhatsApp. The questionnaires were requested to be completed immediately after the patient's post-cardiorespiratory arrest care and recorded in the medical records to avoid data loss due to recent memory loss.

The questionnaires were collected in the emergency room itself, and the questionnaires were available in the medical prescription room and at the nursing station. The questionnaire took approximately 10 minutes to complete. After completing the questionnaires, participants placed them in an envelope, which was collected daily for later transcription. The initials of their professional category followed by a serial number identified participants.

Quantitative data were analyzed using simple descriptive statistics and compiled. Qualitative data were grouped by thematic similarity, according to Bardin⁽¹³⁾, and categorized into time screening, medication administration, conduct, communication, materials/equipment, space,

and multidisciplinary team. Comparisons were made with national and international literature.

Because this is a human research project, the project was registered on the Brazil platform under the Certificate of Submission of Ethical Appreciation (CAAE) number 66633622.2.0000.0121 and submitted to the Human Research Ethics Committee (CEPSH) of the Federal University of Santa Catarina (UFSC). It was approved at a collegiate meeting with Consolidated Opinion number 5,921,193. Authorization for its implementation was also requested from the institution's Teaching and Research Management. All participants were volunteers and expressly agreed to participate in the research by signing the Informed Consent Form (ICF).

Results

Twenty-six professionals participated in the study: 4 nurses, 7 physicians, 1 resident physician, and 18 nursing technicians. They completed 30 of the 50 questionnaires provided, of which 18 (60%) were female. The mean age of the study participants was 36 years and 11 months. The mean time since graduation was 12 years and 10 months, the mean time working in emergency services was 8 years and 10 months, and the mean time working in the emergency department of the hospital where the study was conducted was 5 years and 9 months.

Of the categories of professionals invited to participate in the study, only the Resident Nurse category did not respond to the questionnaire. The distribution of participants by gender, professional category, age group, time since graduation, time working in emergency services, and time working at the location where this study was conducted is illustrated in Table 1.

Table 1 – Profile of the professionals participating in the study. Florianópolis, Santa Catarina, Brazil, 2023. (N=30)

Distribution of participants	n (%)
Sex	
Female	18 (60)
Male	12 (40)

Table 1 – Profile of the professionals participating in the study. Florianópolis, Santa Catarina, Brazil, 2023. (N=30)

Distribution of participants	n (%)
Age Group	
25 to 30 years	3 (10)
31 to 35 years	12 (40)
36 to 40 years	4 (13)
> 40 years	11 (37)
Professional Category	
Nurse	4 (14)
Resident Nurse	-
Nursing Technician	18 (60)
Physician	7 (23)
Resident Physician	1(3)
Training time	
0 to 5 years	1 (3)
6 to 10 years	14 (47)
11 to 15 years	6 (20)
16 to 20 years	5 (17)
> 20 years	4 (11)
Time working in Emergency Services	
0 to 5 years	13 (43)
6 to 10 years	9 (30)
11 to 15 years	3 (10)
16 to 20 years	2 (7)
> 20 years	3 (10)
Length of experience in the Emergency Service studied	
0 to 5 years	21(70)
6 to 10 years	3 (10)
11 to 15 years	3 (10)
16 to 20 years	3 (10)
> 20 years	-

Source: Created by the author.

Note: Conventional symbol used:

- Numerical data equal to zero not resulting from rounding.

Regarding Patient Safety, only one professional reported not having observed any problems during cardiorespiratory arrest care. The challenges to ensuring patient safety most frequently reported by professionals were communication problems, present in 19 (66.67%) responses, followed by conduct errors 10 (33.33%), delay in medication administration 9 (30%), time counting error 7 (23.3%), delay in defibrillation 1 (3.33%), medication error 1 (3.33%), and others 7 (23.3%). The problems included in the “others” item were lack of team initiative to perform cardiac compressions, lack of a rigid backboard, patient with infiltrated venous access, excess people in the resuscitation room, faulty gas meter, delay in

checking the pulse and restarting compressions, and inadequate physical structure.

Communication failures during resuscitation were reported by 14 participants, and were perceived by all professional categories, several of which were related to inadequate communication between professionals in charge of actions during CRA care, as shown in the reports below:

Another physician wanted to take charge of the cardiorespiratory arrest, which caused a commotion. (PHY5).

Delays in administering atropine due to communication issues. Too many professionals requesting medications at the same time and too few preparing them. (NUR2).

Too many professionals, often with no one taking the lead in the procedure. (NT4).

Different people requesting different medications at the same time, not having time to prepare even the first order. (NT5).

More than one physician delegating duties and medications [...] (NT7).

Two physicians in charge of the cardiorespiratory arrest, with requests for different procedures being made between them. (NT10).

Lack of organization regarding the distribution of team duties during the cardiorespiratory arrest. (NT17).

[...] more than one professional requesting medications at the same time, uncoordinated team [...] (NT14).

[...] attempted verbal assistance without a clear loop. (PHY7).

Reports in the questionnaires also included conduct failures during care, mostly related to leadership and failure to follow cardiopulmonary resuscitation guidelines.

The fellow physician wanted to intubate the patient even before monitoring and asked to stop massaging to intubate. (PHY2).

There could be some control over the compressions, but a rigid board was not placed on the patient. (NT15).

The resident physician on duty was unsure when noisy breathing and bradycardia were identified [delay in referral for resuscitation]. He started [cardiopulmonary resuscitation] CPR without a rigid board and cycle counting [until staff arrived]. (NUR4).

More than one physician delegating duties and medications, uncoordinated time counting, and untimely medication administration. (NT7).

There was more than one attending physician in attendance; it was unclear who was in charge. The time counting was not clearly indicated; a physician started the stopwatch on her cell phone and left it on the counter [...] It was unclear who was taking turns massaging, whether the patient had actually returned... the massage continued, for the medication. A bit convoluted. (NT18).

Medication administration also emerged as a challenge reported by professionals participating in the study, most of which were related to communication failures.

Delays in aspirating and administering atropine. (PHY1).

[...] medication administration, more than one professional requesting medications at the same time [...] (NT14).

Delays in atropine administration due to communication issues. (NUR2).

Different people requesting different medications all the time, not having time to prepare even the first order. Lack of technicians to prepare medication, more administration [...] (NT5).

More than one physician delegating duties and medications [...] and medication administration out of time. (NT7).

I was administering medication, but I confess that there were times when I stopped to help, re-injected, and finally, the adrenaline intervals were unclear. The analog clock on the wall didn't help either. (NT18).

[...] a one-cycle delay in administering adrenaline. (PHY7).

Time counting was also present in the questionnaire reports, directly relating to problems with medication administration, conduct errors and communication.

It takes a while for care to be initiated. There was no leader during the CRA, and things were missed, such as the start of the countdown and delays in starting the patient's ventilation. (NT11).

At the time of the CRA, no one had taken charge of the time from the beginning, but the error was later corrected. (NT12).

CPR began without a rigid backboard and cycle counting [until the staff arrived]. (NUR4).

More than one physician delegating duties and medications, uncoordinated timekeeping, and untimely medication administration. (NT7).

The time counting is not well-indicated. A physician started the stopwatch on her cell phone and left it on the counter. I was administering medication, but I confess that there were times when I stopped to help, re-injected, and finally, the epinephrine intervals were unclear. The analog clock on the wall was also not helpful. (NT18).

We started the time counting minutes after the actual start [...] (PHY7).

Errors in time counting and medication administration, more than one provider ordering medications at the same time, uncoordinated staff, and too many people in the room unavailable for assistance. (NT14).

Delay in checking pulse and restarting CPR. (PHY6).

Regarding the multidisciplinary team, several challenges were recorded during CRA care, with reports focusing on the excess of people in the resuscitation room, lack of proactivity, excessive side conversations and a lack of team harmony.

Misaligned multidisciplinary team. (NT11).

[...] a multidisciplinary team without adequate training, medicine out of sync with nursing. (NT14).

Professionals are in the front, requiring permission to perform procedures. Many students who do not assist and disrupt the flow, do not want to work, and even claim they are not wearing gloves, do not want to help, and do not leave the scene unless asked to leave. (PHY7).

Clutter, unnecessary conversation, communication difficulties, and lack of space. (NT3).

Uncoordinated multidisciplinary team... More than one physician delegating functions and medications [...] (NT7).

Lack of organization regarding the distribution of team duties during cardiorespiratory arrest. (NT17).

Two physicians in charge of cardiorespiratory arrest, with different procedure requests being made between them. (NT8).

A lack of technicians to prepare medication, more administration, but many other professionals simply observing what is happening, hindering the progress of the work. (NT5).

Several people [students and staff] were watching the CRA, but there were only two people giving massages [taking turns, but they were already tired]. There was a lack of proactivity. (PHY3).

All professional categories reported problems with physical space, materials and equipment as challenges encountered in CRA care.

Reduced physical space, with many equipment wires hindering the movement of some professionals. Perhaps review the position of the emergency cart. Lack of capnography device (RPHY1).

Inadequate space in the resuscitation unit! The stretcher doesn't stay in place; in addition to all the work, someone had to hold the stretcher too! (NT9).

Lack of materials or replacement materials in the respective locations. Lack of space for the professionals working [...] (NT5).

A bougie was needed but wasn't available [they didn't know where it was, as the emergency cart didn't have one]. (PHY2).

Insufficient space at the patient's headboard. Lack of equipment [...] (NT16).

Missing rigid board, wheel locks not working. (NT2).

Inadequate stretcher, lack of physical space, inadequate air conditioning. (NT13).

The space should be larger; the CRA cart could be in a different location, as the current location hinders team movement. (NT15).

The stretcher moves even with the wheels locked; three people were required to hold the stretcher for chest compressions to be performed safely. As a result, more people had to be in the room, making the already small space even smaller. (NUR3).

Discussion

The age group of the study participants is similar to that found in Brazilian literature, which

indicates that more than 50% of emergency service professionals are over 30 years old⁽¹⁴⁻¹⁵⁾. The study demonstrated an experienced team, with the majority of participants having more than six years of training and experience in emergency services. Work experience is strongly linked to knowledge and positive attitudes in cardiorespiratory arrest care, as professionals are more exposed to these events and seek theoretical knowledge through reading resuscitation guidelines⁽¹⁶⁾.

It is important to emphasize that errors during cardiorespiratory arrest care are frequent and are generally related to leadership, teamwork, and communication⁽⁵⁾. All of the problems cited by these authors were also found in this study, with communication errors being the most reported, present in 66.67%, followed by conduct errors, medication delays, and time counting errors. These aspects point to a deviation from patient safety. The AHA guidelines indicate that incorporating time counting, cardiopulmonary resuscitation quality, and coordination and administration of appropriate procedures during cardiorespiratory arrest are necessary to ensure a high-performance team in this care⁽¹⁷⁾.

Of all the questionnaires completed, only one participant stated that he had not perceived any problem/challenge related to patient safety. However, he noted that there was no rigid stretcher at the beginning of cardiorespiratory arrest care, which may contribute to a lack of effectiveness in cardiac compressions, compromising the quality of care. A lack of adequate understanding of the term *Patient Safety* among healthcare professionals can represent an obstacle to improving processes and practices related to patient safety in the healthcare system. Training and education on this topic is extremely beneficial for all healthcare professionals⁽¹⁸⁾.

Regarding the Time Counting category, the AHA recommends having a professional timekeeper responsible for signaling the time for epinephrine administration every 3 to 5 minutes and for performing 2-minute cycles of cardiac compressions, checking for a pulse at the end of this time, besides recording the time of the first

compression and shocks, and the frequency and duration of interruptions in compressions⁽⁸⁾. The professionals' comments note that time counting often begins after the actual start of resuscitation, that sometimes there is no one responsible for time counting, and that, for these reasons, there are delays in medication administration, the start of resuscitation, and longer-than-ideal interruption times for chest compressions. No current national or international literature was found that discusses this topic.

The AHA emphasizes the importance of careful time counting during cardiopulmonary resuscitation, as failure to do so can negatively affect patient outcomes. Chest compression cycles should be two minutes long, but the pause between two cycles should not exceed ten seconds, aiming to minimize interruptions in compressions. Compression cycles longer than two minutes exhaust the provider performing the compressions, compromising resuscitation efficiency⁽⁸⁾. A study conducted in China showed that delayed initiation of resuscitation actions, increased interruptions in compressions, and failure to follow resuscitation guidelines lead to increased patient mortality rates⁽¹⁹⁾.

In the *Medication Administration* category, the literature is consistent with the findings of this study regarding errors related to medication administration, indicating that it is one of the main adverse events in cardiorespiratory arrest care. For providers, verbal prescriptions were a culprit in confusion and delays in medication administration during Cardiopulmonary resuscitation⁽²⁰⁾. Verbal communication of prescriptions, test orders, and its results is prone to errors. Verbal or ambiguous prescriptions are considered the main source of problems, often resulting in duplication or omission of medication treatment⁽²⁰⁾. An improvement in the survival rate of patients with cardiorespiratory arrest with non-shockable rhythms was observed when a standard dose of epinephrine (1 mg intravenously every 3 to 5 minutes) was administered during CPR, while a worse prognosis was observed in cases of delayed administration^(9,21). This highlights the

importance of careful medication administration at the optimal time to ensure a satisfactory outcome.

Regarding the *Conduct Failures* category, authors^(5,8) point out that the variation in cardiorespiratory arrest survival rates is directly related to the immediate initiation of CPR measures, adherence to the chain of survival, and harmonious collaboration among team members. In this sense, high-performing hospitals adopt dedicated and skilled resuscitation teams, composed of professionals from different areas, with clearly defined roles and responsibilities. Furthermore, they prioritize communication and effective leadership during the CPR process^(5,8).

In this study, it was observed that there were times when the presence of more than one leader and a lack of assertive communication led to flawed behavior and consequent detriment to care. A study conducted in China concluded that less than 1% of resident physicians had training in CPR guidelines, which is one of the factors responsible for the low patient survival rate⁽¹⁸⁾. Every resuscitation team should have a designated leader, responsible for ensuring that actions are performed correctly and in a timely manner, monitoring and integrating the performance of each member. The leader also serves as a coach for new leaders and can help analyze and identify opportunities for team improvement for the next resuscitation attempt⁽¹⁷⁾.

The issue of multidisciplinary teamwork and work as a team was also highlighted by participants as creating safety issues, with overstaffing the resuscitation room and unnecessary conversations being the most frequently cited. The large number of people in the room can be explained by the fact that the hospital in question is a teaching hospital, serving as an internship site for undergraduate students and residents. A hectic cardiac arrest care environment is cited by professionals as detrimental to resuscitation and increases team stress, making it difficult to manage resuscitation actions⁽²²⁾.

Participants highlighted the lack of harmony among team members as a contributing factor to patients' safety issues. Although the team has experience working in emergency services,

70% of the participants had worked at the study site for less than 5 years, which may be related to the disharmony among professionals. Furthermore, there is no rapid response team for cardiorespiratory arrest care at the hospital in question. The presence of such a team has shown positive results in preventing errors during cardiorespiratory arrest care⁽⁸⁾.

The importance of communication problems has been recognized as a challenge to patient safety, and this is most evident in emergency services. Errors related to handover of care and medical prescriptions are examples of communication failures that have a significant impact on patient safety. Effective communication among healthcare professionals is a fundamental principle for safe care and is considered an essential structural element^(19,23).

The data revealed that communication issues outweighed all other patient safety issues, indicating that care often lacked clear control because more than one person determined the actions, and the team didn't know who to respond to. When initiating cardiopulmonary resuscitation, it's crucial that the team understands who will be responsible for leadership and that each person understands his role in the care.

Corroborating this study, research examining the barriers and opportunities for in-hospital cardiorespiratory arrest care showed that the lack of effective closed-loop communication, unclear distribution of responsibilities among team members, delays in administering medication and defibrillation, and inexperienced leadership who lacks clear communication and appropriate intonation are obstacles to adequate cardiorespiratory arrest care⁽⁶⁾. These findings are consistent with the findings of this study, in which participants highlighted the lack of clarity, information mismatch, and poor team coordination.

The importance of frequent advanced life support training is emphasized, as successful cardiorespiratory arrest care requires not only medical knowledge and resuscitation skills, but also effective communication and team dynamics⁽¹⁶⁻¹⁷⁾. Another important aspect

concerns the need for the service to have a more permanent staff, with lower staff turnover, as high staff turnover may be related to worsening patient safety⁽²⁴⁾.

In the *Physical Structure* category, the structural issues of the rooms where CRA care was performed and the quality of the equipment were cited by professionals, as well as the lack of necessary supplies, as challenges to ensuring patient safety. The participants' statements reinforce how difficult it is for them to deal with so many weaknesses and the need for readjustment of the resuscitation area, making it urgent to improve the quality of care, and this responsibility falls to local managers.

The institution's organizational and management factors influence the occurrence of adverse events. This research highlighted the need to readjust the physical space for resuscitation of emergency room patients, opening up the opportunity for further study aimed at understanding the specific needs for improvement in the environment and equipment at this location. The World Health Organization (WHO) has developed a guide for healthcare facilities to standardize resuscitation areas, ensuring the availability of adequate resources and the rapid initiation of emergency care. According to this guide, the resuscitation room should be visible to physicians and nurses, be large enough to accommodate multiple professionals and equipment, and be well-equipped with supplies for the care of critically ill patients⁽²⁴⁻²⁵⁾.

Although a frequent event in emergency services, cardiorespiratory arrest poses a significant physical and psychological challenge to the professionals involved. Healthcare staff may face high levels of acute stress, which, in turn, can impact their ability to concentrate, distort the perception of time, lead to delays in medication administration and defibrillation, and affect the quality of care provided⁽⁵⁻⁶⁾.

It was also observed that, despite the team's experience in other emergency services, this experience is considered new to the local emergency service in this study, and further

training is needed to update and adjust resuscitation actions among the multidisciplinary team members. Regular training of professionals and adherence to advanced cardiac life support guidelines are essential in cardiorespiratory arrest care, increasing patient survival rates⁽⁹⁾.

Finally, it is emphasized that this study will contribute to understanding the issues faced by emergency services professionals in the context of cardiorespiratory arrest care, highlighting the need for improvement to reduce incidents and improve the quality of care provided, and influencing healthcare institutions to implement management measures to support teams, such as adapting resuscitation rooms and providing professional training.

A limitation of this study is the limited literature discussing patient safety incidents during cardiorespiratory arrest in emergency services, limiting the comparison of findings.

Final considerations

The study provided insight into the main patient safety challenges encountered during cardiorespiratory arrest care from the perspective of professionals working in the emergency department, comparing them with findings from current literature. The study was conducted in an emergency department in southern Brazil; however, national and international literature points to the same challenges in other emergency departments.

Communication problems were the most frequently cited by study participants, a complicating factor for the occurrence of other incidents, such as delays in medication administration, time counting errors, and conduct errors.

There is a clear need to develop strategies that assist professionals in organizing CPR actions, avoiding human error, reducing communication disruptions within the multidisciplinary team, and, consequently, improving patient safety during cardiorespiratory arrest care.

A gap was observed in the current national and international literature regarding patient safety incidents during cardiopulmonary

resuscitation. Therefore, further studies are needed to understand the challenges faced during cardiorespiratory arrest care to ensure patient safety.

Collaborations:

1 – Project conception and planning: Ana Sílvia Sincero dos Reis Walendowsky, Nádia Maria Chiodelli Salum, and Mônica Stein;

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Conflicts of interest

There are no conflicts of interest.

Data Availability Statement

The dataset supporting the results of this study was published in the Professional Doctoral thesis titled “Minimum Viable Product of a Visual Communication System for Patient Safety in Cardiac Arrest Care”.

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