

Evaluation of the Nursing Records about Cardiac Arrest and Cardiopulmonary Resuscitation Compared to the Utstein Model

Avaliação do registro de enfermagem sobre parada cardiorespiratória e reanimação cardiopulmonar comparado ao modelo Utstein

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Resumo

Introdução: Os casos de Parada Cardiorrespiratória devem ser registrados de forma completa e detalhada, desde a sua causa até as intervenções realizadas a fim de obter o retorno da circulação espontânea. **Objetivo:** Avaliar a qualidade dos registros de enfermagem sobre parada cardiorrespiratória e reanimação cardiopulmonar com base no modelo Utstein. **Materiais e métodos:** Estudo transversal, exploratório - descritivo, quantitativo, realizado em duas Unidades de Terapia Intensiva, com avaliação em prontuário de registros de parada cardiorrespiratória e reanimação cardiopulmonar com retorno da circulação espontânea ou óbito, pelo período de dois meses. **Resultados:** Foram avaliados 41 registros, de pacientes com idade entre 22 e 79 anos, sendo 14 (51,9%) homens. Em 13 (31,7%) registros não havia descrição de quaisquer manobras de reanimação e, quando descritos, na maioria deles não havia especificação das intervenções realizadas. A descrição da causa da parada cardiorrespiratória estava ausente em 38 (92,7%) e do ritmo em 37 (90,3%) registros. Em mais da metade não havia registros dos tempos dos eventos e nem um mencionava quais os profissionais envolvidos na reanimação cardiopulmonar. **Conclusão:** Todas as anotações estavam incompletas frente ao modelo Utstein, isso dificulta a obtenção de dados para realização de pesquisas sobre a temática e expõe a precariedade do registro realizado sem método sistemático..

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Palavras-chave: enfermagem; equipes de enfermagem; parada cardíaca; registros de enfermagem; reanimação cardiopulmonar; unidades de terapia intensiva

Abstract

Introduction: Cardiopulmonary arrest cases must be recorded in a complete and detailed way, from its cause to the interventions performed in order to obtain the return of spontaneous circulation. **Objective:** To evaluate the quality of nursing records on cardiopulmonary arrest and cardiopulmonary resuscitation based on the Utstein model. **Methods:** Cross-sectional, exploratory - descriptive, quantitative study, carried out in two Intensive Care Units, with evaluation of medical records of cardiac arrest and cardiopulmonary resuscitation records with return of spontaneous circulation or death, for a period of two months. **Results:** 41 records were evaluated, of patients aged between 22 and 79 years old, 14 (51.9%) of whom were men. In 13 (31.7%) records there was no description of any resuscitation maneuvers and, when described, in most of them there was no specification of the interventions performed. The description of the cause of the cardiorespiratory arrest was absent in 38 (92.7%) and of the rhythm in 37 (90.3%) records. In more than half there were no records of the times of the events and not one mentioned which professionals were involved in cardiopulmonary resuscitation. **Conclusion:** All annotations were incomplete compared to the Utstein model, this makes it difficult to obtain data for conducting research on the subject and exposes the precariousness of the registration carried out without a systematic method.

Keywords: nursing; nursing teams; cardiac arrest; nursing records; cardiopulmonary resuscitation; intensive care units

Introduction

Cardiac Arrest is a most severe and emergency medical priority. Survival rates drop by up to 10% for every minute without Cardiopulmonary Resuscitation (CPR), therefore it's necessary providing immediate support to the victim. However, even after suitable assistance, survival rates are still low, varying from 4 to 33%.⁽¹⁾

Four types of cardiac rhythms can trigger Cardiac Arrest: ventricular fibrillation and pulseless ventricular tachycardia, which are associated with primary cardiac causes and occur more commonly in the out-of-hospital environment, and pulseless electrical activity and asystole, which are more prevalent in the in-hospital environment since they are more closely related to the worsening of the hospitalized patient's clinical condition.⁽²⁾

In the hospital environment, by being the ones who work closer to the patient, nurses are usually the first to witness Cardiac Arrest and initiate the first aid measures.⁽³⁾ According to the 704/2022 resolution of the Federal Council of Nursing, the nursing team can use the automatic electronic defibrillator (AED)

and, in the absence of it, the nurse can handle the manual defibrillator.⁽⁴⁾

In addition to providing care to the patient, the nursing professional also must clearly, completely and chronologically record the activities they perform.⁽⁵⁾ Records are important in care practice, as they ease the process of understanding the patient's health status, serving as a means of communication between professionals and informing about the care provided.⁽⁶⁾ Beyond the care scope, nursing notes have repercussions on legal, pedagogical and administrative issues.⁽⁷⁾

Cardiac Arrest cases must be recorded in a complete and detailed manner, from cause to the interventions performed in order to obtain the return of spontaneous circulation. Due to difficulties in carrying out research on CA and CPR due to the lack of data standardization and, thus, the impossibility of comparing procedures between different countries, in 1990, in the city of Utstein⁽⁸⁾, a model for recording CA was created — Utstein model. This model was translated and adapted into Portuguese and regards the patient and his initial condition, CRA characteristics, interventions performed in order to obtain the return of circulation and patient outcome.⁽⁹⁾



As a result, this research becomes relevant due to the importance of there being a standardised data registry through the Utstein model, as these work as a database for new research, allowing mapping of the epidemiological profile, making associations between variables, verifying, prognostic factors and outcomes, favouring, then, decision-making and implementing new guidelines on CA care, as well as allowing comparison between health services.^(3,10,11,12)

This study aims to evaluate the quality of nursing records on Cardiac Arrest and Cardiopulmonary Resuscitation in intensive care units, comparing them with the Utstein model.

Materials and Methods

This is a cross-sectional, exploratory-descriptive, study of quantitative nature. The data collection was carried out in the medical records of patients who suffered CA and came or not to death, in two Intensive Care Units (ICUs) of a hospital located in the Southwest Region of Bahia. Together these Units encompass 19 beds. The study was approved by the Hospital's Permanent Education Centre and by the Committee of Ethics in Research of the Federal University of Bahia/Multidisciplinary Institute in Health/Anísio Teixeira Campus (IMS/UFBA/CAT), under notion nº 2.625.432 and CAAE: 83456118.9.0000.5556 and prepared in compliance with guidelines and standards for research involving human subjects.

Forty-two nursing records of patients who suffered CA in May and June 2018 were evaluated, of which one was excluded due to illegibility. Therefore, 41 records were considered for the present study. In some cases, more than one record was collected per patient, considering that CA could occur more than once with the same patient and the goal of the study was to evaluate the record.

Data collection was carried out through a daily active search for CA cases in the ICUs inspected, the data were collected from the medical records within the unit itself in cases of CA victims still hospitalized, and in events of death, the patient's name and registration number for access to the medical record in the Medical Records and Statistic Service (MRSS) of the hospital unit were collected.

For data collection, an instrument was developed based on the Utstein model adapted into Portuguese⁽⁹⁾. The Utstein protocol evaluates elements assigned in blocks of variables related to the patient (gender, age, location, interventions before the event), variables at the moment of Cardiac Arrest (cause, patient state, rhythm, interventions applied, timing of events, and healthcare professionals involved), and outcomes achieved after CPR (death or hospital discharge with patient follow-up).

To assess the standard of the records, the collected data were compared with the elements contained in the Utstein model. However, regarding the outcome after CPR, this study was limited to evaluating the immediate outcome record (death or return of spontaneous circulation), since the objective of the study was to assess the standard of the records and not the patient follow-up. The data were analyzed using descriptive statistics (absolute numbers and percentages) using Microsoft Office Excel 2007.

Results

A total of 41 CPR records that occurred during the data collection period were analysed. All 27 patients who suffered from CA had their complete identification in the medical records, including name, age, sex, hospital registration, and diagnosis. 51.9% of the samples were male, and the majority were over 60 years old. (Table 1)



Table 1 - Profile of subjects who experienced Cardiac Arrest in two intensive care units of a public hospital, in the months of May and June. Vitória da Conquista – Ba , 2018.

Variables	n°	%
Gender		
Male	14	51,9
Female	13	48,1
Age		
< 30	1	3,7
30-60	12	44,4
>60	14	51,9

Regarding the CPR attempt, in 13 (31.7%) records, there was no information about this item, 27 (65.9%) had a record of a resuscitation attempt, and only 1 (2.4%) indicated that the patient was not recommended for CPR. (Table 2).

Table 2 - Characteristics of nursing records regarding Cardiopulmonary Resuscitation attempts in patients who experienced Cardiac Arrest in two intensive care units of a public hospital, in the months of May and June. Vitória da Conquista – Ba , 2018.

CPR Attempt	n°	%
No Records	13	31,7
Recorded	27	65,9
Do Not Resuscitate order record	1	2,4
Total	41	100

CPR - Cardiopulmonary Resuscitation

Among the 27 records of CPR attempts, chest compressions were recorded in 6 (22.2%), medications were administered in 11 (40.7%), 1 (3.7%) had orotracheal intubation, 1 (3.7%) had a connection to mechanical ventilation, and 21 (77.8%) had documentation of Cardiopulmonary Resuscitation without specifying the actions performed. There were no records of defibrillation. Regarding the patient's initial conditions before CA,

over half (53.7%) had no annotations about the patient's clinical condition. Among the medical records where the initial conditions of the patients were registered, the most frequent annotations were related to hemodynamic aspects (29.3%) and the term "severe general condition" (29.3%). Aspects of the level of consciousness and breathing were described in only two CA records. (Table 3).



Table 3 - Records of the interventions performed during Cardiopulmonary Resuscitation and the subject initial condition before Cardiac Arrest in two intensive care units of a public hospital, in the months of May and June. Vitória da Conquista – Ba , 2018.

Interventions during CPR	n°	%
Chest Compressions	6	22,2
Medication Administration	11	40,7
Orotracheal Intubation	1	3,7
Connected to Mechanical Ventilation	1	3,7
CPR Protocol Initiation (no specification)	21	77,8
Other	1	3,7
Subject Initial Condition	n°	%
No Records	22	53,7
Hemodynamic Conditions	12	29,3
Levels of Consciousness	2	4,9
Breathing	2	4,9
Serious General Condition	12	29,3
Other	2	4,9

CPR - Cardiopulmonary Resuscitation

Data on the cause of CA were scarce, as 38 (92.7%) records did not mention the origin of this event. As for the

CA rhythm, 37 (90.3%) of the medical records had no information. (Table 4).

Table 4 - Record evaluation of cause and rhythm of Cardiac Arrest in two intensive care units of a public hospital, in the months of May and June. Vitória da Conquista – Ba , 2018.

Variables	n°	%
CA Cause		
No Record	38	92,7
Recorded	3	7,3
Total	41	100
CA Rhythm		
No Record	37	90,3
Asystole	1	2,4
Pulseless Electrical Activity	2	4,9
Ventricular Fibrillation	1	2,4
Total	41	100

CA - Cardiac Arrest



Regarding the timing of events, in 16 (59.3%) of the 27 medical records of patients who were resuscitated, there was

no information available. The remaining records mainly included the duration of CA and CPR (29.6%) (Table 5).

Table 5 - Characteristics of the records regarding the timing of events that happened during Cardiac Arrest and Cardiopulmonary Resuscitation in two intensive care units of a public hospital, in the months of May and June. Vitória da Conquista – Ba, 2018. Vitória da Conquista, 2018

Event Timing	n°	%
No Record	16	59,3
Collapse starting point/ CPR starting point	1	3,7
CPR ending point	1	3,7
CA/CPR duration	8	29,6
Other	3	11,1

CPR- Cardiopulmonary Resuscitation ; CA- Cardiac Arrest.

Discussion

Of the total medical records analysed, there was no predominance of either sex — 51.9% of the patients were over 60 years old. Studies to evaluate the epidemiological profile of patients admitted to general ICUs also demonstrate a prevalence of elderly patients.^(13,14) A study conducted in New Zealand showed a correlation between age and survival, with younger patients having a higher chance of survival.⁽¹⁵⁾

The presence of almost one-third of medical records without any notation about resuscitation manoeuvres is a relevant and alarming detection since those same records also do not provide information about the indication of no resuscitation. Therefore, it is not clear whether resuscitation was performed or not, and whether the reason for not resuscitating was due to poor prognosis. Among the patients not resuscitated, only one nursing record provides information about the indication of no resuscitation.

In Brazil, in an interview conducted with five nursing professionals from an ICU in Santa Catarina, three of them reported

that medical records do not contain documentation about Do Not Resuscitate (DNR) orders, and one professional stated that they are documented but not explicitly.⁽¹⁶⁾

In a survey conducted in oncology hospitals in Portugal to understand ethical dilemmas related to DNR orders, most nurses said that DNR orders are written in medical records, but some mentioned that they were only communicated orally.⁽¹⁷⁾ A study aimed at evaluating the attitudes of physicians regarding DNR orders showed that over 90% of the surveyed professionals considered it important to record DNR orders in medical records and pointed out the need for standardisation regarding this documentation.⁽¹⁸⁾

Furthermore, most records on resuscitation attempts did not specify the actions performed during CPR. They only referred to "resuscitation manoeuvres," making this information imprecise and vague since it does not clarify the specific actions taken. Cardiac defibrillation is indicated in two rhythms of CA, Ventricular Tachycardia without Pulse, and Ventricular Fibrillation, which are more common in the out-of-hospital setting.⁽²⁾ There was no



description of the use of a defibrillator or bag-valve mask during CPR. The use of medications was reported in only 40.7% of cases, although it is assumed that medications, especially epinephrine, were used in almost all resuscitation attempts as it is the drug of choice for reversing CA.⁽¹⁹⁾ A study conducted in a university hospital in São Paulo demonstrated that the use of medications was reported in only 50% of CPR records.⁽²⁰⁾

Similar results were found in a survey in a post-operative cardiac surgery ICU, where 16 medical records were excluded from the study due to the lack of any documentation of CPR. Among the selected records, the establishment of a definitive airway and chest compressions were described in less than 10%, and defibrillation in less than 20% of the cases.⁽²¹⁾ The lack of records jeopardises communication between the team, isn't clear whether assistance was provided or not, and reflects ethical and administrative issues.⁽⁷⁾

Regarding the patient's clinical condition, it is known that patients already intubated or on mechanical ventilation before CA have a lower chance of returning to spontaneous circulation due to their more critical condition.⁽¹⁰⁾ It is also known that patients with standard arterial hypertension values have a greater chance of returning to spontaneous circulation.⁽²²⁾ These data demonstrate the importance of reporting the patient's condition before the event. A study conducted in an ICU of a public hospital in Fortaleza showed that nursing records did not reflect the true severity of the patients.⁽²³⁾

Proper documentation of the entire process of CA and CPR enables the analysis of different elements, such as profiling patients, evaluating the main causes of Cardiac Arrest and associated rhythms and relating them to the patient's prognosis.^(8,24) In this study, the record of the cause and rhythm of Cardiac Arrest was extremely scarce, with no record in 92.7% and 90.3%

of cases, respectively. Similar results were found in a university hospital, where over 90% of medical records had no information about the cause, and about 60% did not reference the rhythm.⁽²⁰⁾

The lack of documentation regarding the rhythm of Cardiac Arrest could be due to the lack of knowledge of electrocardiographic changes, as shown in a study conducted in non-hospital units providing urgent and emergency care in the city of Campinas⁽²⁵⁾, where over 80% of nurses were unable to identify lethal arrhythmias. Another study conducted in an ICU showed that over 40% of nursing professionals recognised only asystole as the rhythm of Cardiac Arrest.⁽²⁶⁾

A study conducted with postgraduate nurses in Hemodynamics and Cardiology showed that 72% of them knew which cardiac rhythms are defibrillable⁽²⁷⁾, but that does not necessarily mean recognising the electrocardiographic changes of each rhythm.

A study conducted in an ICU and Coronary Unit of a university hospital using the Utstein model showed a low survival rate for post-CA patients, which may be associated with the most prevalent rhythms being asystole and pulseless electrical activity.⁽²⁸⁾

The timing of various events from the collapse starting point to its ending should also be recorded. The CPR guidelines⁽¹⁹⁾ always emphasise timing in their recommendations, such as immediate compressions after acknowledging CA, early defibrillation, and administration of epinephrine in 1 to 3 minutes. In this study, 59.3% had no notation about the timing of events, and most of the notations related to this item were about the duration of circulatory collapse. None of the records reported the time of the first defibrillation or the first dose of adrenaline, as recommended by the Utstein model. In a university hospital, data collected using the Utstein model showed that the average time for the start of resuscitation was 0.68



minutes, considered a short interval, but the average time for the first defibrillation was 7.1 minutes, whereas, in the United States, this time is 1.5 minutes.⁽²⁸⁾

A study conducted with nurses previously trained to fill out data based on the Utstein model showed incomplete completion of items related to the timing of events in over 90% of the medical records.⁽²⁹⁾ In an Australian hospital, where the data related to Cardiac Arrest and CPR were recorded based on the Utstein protocol, researchers concluded that prompt identification of Cardiac Arrest by the nursing team, the presence of shockable rhythms, and access to an automated external defibrillator, allowing for early defibrillation, are associated with better survival rates.⁽³⁾

Another important aspect of the Utstein model is the recording of the professionals involved in CPR. Patients attended by professionals trained in Advanced Cardiac Life Support have a higher chance of returning to spontaneous circulation and greater long-term survival chances until hospital discharge.⁽³⁰⁾ In this study, there were no records of the professionals who participated in providing CPR to the victims. When trying to evaluate the applicability of an instrument according to the Utstein model, nurses were asked to complete it, and data about the team were the least filled out, with an average of 27.4%.⁽³¹⁾ Another study showed that in almost 90% of medical records, there was

no record of the professionals participating in CPR.⁽²⁰⁾ The outcome of the patient was described in all records of this study.

It is worth noting that research on out-of-hospital CA and CPR also benefits from the Utstein model as the standard for recording events related to the pre-hospital care process, enabling the association between variables related to care and patient outcomes.⁽³²⁾

Conclusion

The study showed that most of the variables present in the Utstein model were not identified in the records performed by the nursing team, coupled with a lack of sequence in their elaboration. CPR manoeuvres, when described, were vague, potentially leading to legal sanctions for the professionals as it does not allow the identification of what in fact occurred during attempts to restore circulation. The incomplete documentation also results in the nursing team losing visibility as an essential member of the multidisciplinary care team. Furthermore, the lack of data and records without key information hinders the conduct of potential studies on Cardiac Arrest and Cardiopulmonary Resuscitation, which could be used to assist in evaluating ICU work and become indicators for continuous improvement in the care provided to critically ill patients.

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