

## Nursing Knowledge In The Face Of Cardiorespiratory Arrest With Emphasis On First Aid: Integrative Review

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### Abstract:

Cardiorespiratory Arrest (CPA) is a medical emergency characterized by the sudden and unexpected loss of cardiac, respiratory and consciousness functions. In this way, the nurse has a central role in care. Thus, the study aims to analyze the literature and knowledge of nursing knowledge regarding cardiorespiratory arrest. An integrative literature review was carried out. The literary search was carried out by consulting the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE) via the US National Library of Medicine (PubMed), Latin American and Caribbean Literature in Health Sciences (LILACS), Nursing Database (BDENF) via Virtual Health Library (VHL). For this purpose, the following key terms present in the Health Sciences Descriptors (DeCs/MeSH) were crossed: "Cardiac Arrest", "Knowledge, Attitudes and Practice in Health" and "Nursing", "First aid" and their corresponding in English: "Heart Arrest", "Health Knowledge, Attitudes, Practice", "Nursing" and "First Aid" using the Boolean operator "AND". The search in the databases took place in May 2024. In the bibliographic search stage, 181 articles were identified, after applying inclusion and exclusion criteria, 10 studies were eligible for analysis. The analysis of the results revealed two distinct and important categories related to the nurse's role in dealing with the patient in cardiac arrest in the hospital environment, namely: 1) First aid and the nurse's role in the face of cardiorespiratory arrest; 2) Challenges and assistance in Cardiorespiratory Arrest in first aid. The analysis demonstrated that these challenges can be mitigated through continuing education programs, practical simulations, and a work environment that values and supports nursing professionals. It is concluded that future research is essential to continue advancing in improving care for cardiorespiratory arrest

**Key Word:** Cardiac Arrest. Knowledge, Attitudes and Practice in Health. Nursing. First aid.

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## I. Introduction

Cardiorespiratory arrest (CRA) is a medical emergency characterized by the sudden and unexpected loss of cardiac, respiratory, and consciousness functions. This impedes blood flow to vital organs, resulting in the interruption of oxygen supply to essential organs such as the brain and heart, and if not promptly treated, can lead to death. Although respiratory arrest and cardiac arrest are distinct, one often leads to the other without proper intervention (Trujillo; Córdova; Medina, 2020).

CRA has been a concern for healthcare professionals as it affects people of all ages, both adults and children. Most cases are related to cardiac and respiratory problems, emphasizing the importance of early intervention to prevent serious complications and even death (Farias et al., 2021).

According to Feleiciano et al. (2023), the primary triggering cause of CRA is coronary ischemic disease, with approximately 70% of cases occurring outside the hospital setting. In-hospital CRAs are more predictable, usually resulting from acute respiratory problems and/or circulatory shock, with progressive deterioration before the event.

During a CRA, even with optimal professional assistance, there is still a high rate of morbidity and mortality. Cardiopulmonary resuscitation (CPR) aims to restore vital functions of the patient, including circulation, oxygenation, ventilation, and neurological recovery without sequelae (Paula et al., 2021).

The effectiveness of CPR is directly related to the support provided by the team to the patient, both in Basic Life Support (BLS) and Advanced Life Support (ALS). It is essential for nursing professionals to be trained and updated with the latest CPR guidelines to minimize neurological sequelae and mortality caused by inadequate and delayed assistance. The discernment of the nursing team plays a crucial role in determining the success of the care (Guedes et al., 2021).

During a CRA, it is essential to quickly identify the associated cardiac rhythm, such as ventricular fibrillation, pulseless ventricular tachycardia, asystole, or pulseless electrical activity. Immediate initiation of CPR is crucial, as the brain can suffer damage if deprived of oxygen for more than 5 minutes (Haley, 2023).

Carvalho et al. (2020) highlight that CRA poses a serious threat to the patient's life, especially for those in critical condition, such as those admitted to Intensive Care Units (ICU). Care requires scientific knowledge, efficiency, speed, skill, and teamwork. The nurse, often the first to handle the emergency situation, plays a fundamental role in care, from diagnosis to continuous monitoring of resuscitated victims and organizing the environment after the event.

In the face of a CRA emergency, the discernment and capability of the team regarding BLS and ALS are crucial for successful resuscitation. Therefore, it is essential for nursing professionals to be well informed and updated, as they are often the first to intervene and signal to the response team (Rodrigues et al., 2022). Thus, this study aims to analyze the nursing literature on knowledge regarding cardiorespiratory arrest.

## II. Material And Methods

This is an integrative review study aimed at analyzing relevant research and synthesizing knowledge on a specific subject, identifying knowledge gaps that require further investigation (Mendes; Silveira; Galvão, 2008). The integrative review is an approach designed to compile current knowledge on a specific topic by identifying, analyzing, and summarizing results from independent studies related to the same subject. It facilitates evidence-based practice (EBP) by analyzing data related to a specific theme found in the literature, contributing to the definition of concepts. In nursing, this approach is widely used to understand concepts related to health promotion and prevention (Souza; Silva; Carvalho, 2010).

The first step involved establishing the guiding question: "What is nursing knowledge regarding cardiorespiratory arrest in first aid?" The question was formulated using the PICo strategy, which defines a conceptual model to guide targeted research problems (Frandsen et al., 2020). Table 1 demonstrates each axis of the acronym.

**Table 1:** PICo Strategy for Integrative Review. 2024

P- Population/Patients	Patients in Cardiorespiratory Arrest
I- Interest:	Nursing Knowledge
Co- Context	First Aid

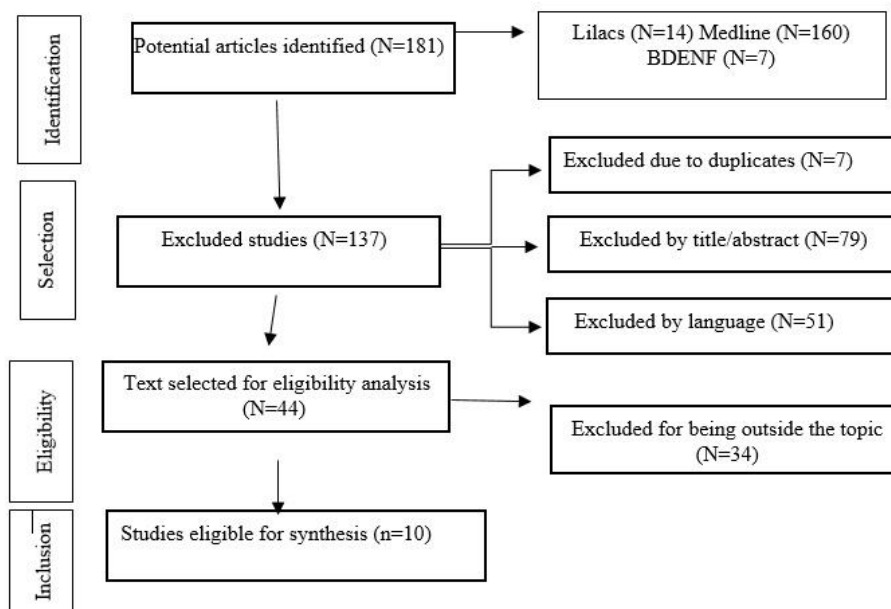
**FONTE:** Research Data (2024).

Literature search was conducted through the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE) via US National Library of Medicine (PubMed), Literatura Latino-americana e do Caribe em Ciências da Saúde (LILACS), Nursing Database (BDENF) via Virtual Health Library (BVS). The search involved cross-referencing the following MeSH (Medical Subject Headings) terms: "Heart Arrest," "Health Knowledge, Attitudes, Practice," "Nursing," "First Aid," and their equivalents in Portuguese and Spanish, using the Boolean operator "AND." The database search was conducted in May 2024. Based on the searches, studies were categorized following these inclusion criteria: full-text articles available in Portuguese,

English, and Spanish, published within the last five years (2019 to December 2023), focusing on the most recent studies on the topic and directly related to the theme.

Exclusions criteria included articles, pre-prints, duplicates, grey literature (theses and monographs), non-systematic review articles, and editorials. Articles were also excluded if their methods lacked sufficient information for readers to understand the research process, retaining only those that provided at least: study type, method, population, techniques, and results. During the bibliographic search stage, 181 articles were identified: 14 from LILACS, 160 from MEDLINE, and 7 from BDNF. Of these, 137 studies were excluded: 7 duplicates, 79 based on title and abstract analysis, and 51 due to being in a language other than the specified ones, leaving 44 studies eligible for analysis. During the eligibility assessment, 34 studies were further excluded for not meeting the study's objectives or being off-topic, resulting in 10 studies that met the inclusion criteria proposed in this study's methodology, as illustrated in Figure 1.

**Figure 1-** Flowchart of the Integrative Review, (2024)



**FONTE:** Research Data (2024).

The pre-selected studies underwent an initial evaluation, which consisted of a superficial reading without significant focus on content, aimed at identifying key studies that met the inclusion criteria and were directly related to the theme. Subsequently, a more detailed reading was conducted to select the most relevant studies, considering criteria such as title, methodology, and main results presented. From the selection, the data underwent interpretative analysis that generated the discussion presented as the final stage. To guide the literature review, an adaptation of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) recommendation was used. PRISMA consists of a checklist of 27 items aimed at helping authors better structure the reporting of systematic reviews and meta-analyses of their research (Moher et al., 2015). In conducting the study analysis, an approach based on the Oxford Levels of Evidence was adopted. These levels provide a structured hierarchy for evaluating the quality and strength of scientific evidence. Ranging from 1 to 5, they assign different degrees of reliability to sources of evidence, with Level 1 associated with evidence from controlled randomized clinical trials, while Level 5 represents evidence derived from expert opinions and case reports (Casarin et al., 2020). Using these levels provided a robust framework for critically assessing and classifying the quality of available evidence, enabling a more precise and objective analysis of the results obtained.

### III. Result And Discussion

Regarding the year of publication, there is a significant variation over time. In 2019, three studies were published, representing 30% of the total. These studies mainly focused on the knowledge and performance of nursing teams in cardiorespiratory arrest situations. In 2020, the number of publications decreased to two studies, accounting for 20% of the total. These studies continued to address the training and skills of nursing teams, but with a reduction in the volume of research published. In 2021, there was a significant increase in the number of publications, with five studies, representing 50% of the total. This increase may reflect a response to

the urgent need to improve knowledge and practices of cardiopulmonary resuscitation in a context possibly influenced by the COVID-19 pandemic, which underscored the importance of an effective response to medical emergencies (see Table 2). The analysis of study types shows that the majority of research was descriptive and cross-sectional, totaling six studies (60%). This predominance suggests a strong interest in describing and quantifying the knowledge and practices of nursing teams in emergency situations, establishing an important foundation for future interventions (see Table 2).

The involvement of a multidisciplinary team in the treatment of patients with Traumatic Brain Injury (TBI) in emergency care is extremely important to ensure a comprehensive and effective approach. Each professional plays a specific and complementary role, contributing to the assessment, stabilization, treatment, and rehabilitation of the patient. Coordination and communication among team members are essential for providing integrated and quality care, allowing for quick and accurate decision-making. The collaborative efforts of doctors, nurses, physiotherapists, occupational therapists, speech therapists, psychologists, and social workers result in holistic and personalized care. Early rehabilitation and the prevention of complications are key focuses of the multidisciplinary team, aiming not only at the patient's survival but also at their functional recovery and reintegration into society. Emotional support for the patient and their family is equally important, helping them cope with the physical and psychological consequences of TBI. The role of the multidisciplinary team in emergency care extends beyond acute treatment to include planning for the continuity of care and the transition to rehabilitation and long-term follow-up. This comprehensive approach promotes better clinical outcomes and quality of life for patients with TBI.

**Table 2: Studies included in the literature review (N=10), 2024.**

Author/Year	Title	Study Type	Results
Moura et al. (2019)	Knowledge and performance of the nursing team in an emergency department during cardiac arrest events	Quantitative, descriptive, cross-sectional	The low percentage of completely correct responses highlights the need for updating the entire nursing team, maintaining uniformity in procedures, thus improving care for critically ill patients.
Guskuma et al. (2019)	Nursing team knowledge of cardiopulmonary resuscitation	Cross-sectional, descriptive, quantitative	There was a decline in subjects' knowledge of resuscitation and cardiac arrest over time. Socioeconomic and professional factors were associated with nursing professionals' knowledge.
Guetterman et al. (2019)	Nursing roles in response to in-hospital cardiac arrest: hospitals with superior versus inferior performance	Qualitative descriptive	Although not proving causality, nurses appear to be crucial for an effective response to cardiac arrest, and supporting their role to optimize outcomes deserves further investigation.
Brandão et al. (2020)	Self-confidence, knowledge, and skills regarding cardiopulmonary resuscitation of nursing interns	Descriptive, quantitative	Weaknesses in knowledge and skills were identified, highlighting the relevance of new methodologies to intensify and ensure the effectiveness of the teaching-learning process.
Santiago et al. (2020)	Cardiac arrest: interventions by nursing professionals	Descriptive, qualitative	Results show that professionals working in emergency settings are not adequately qualified to handle victims of cardiac arrest, necessitating improvement in practices and qualifications to increase survival rates of patients affected by this clinical situation.
Assis et al. (2021)	Nursing team knowledge in intensive care units regarding cardiopulmonary resuscitation	Descriptive, exploratory, quantitative approach	The nursing team has unsatisfactory knowledge on the proposed topic, as many professionals base their practices on outdated guidelines.
Ozkara et al. (2021)	Incorporation of deliberate practice rapid cycle cardiac arrest simulation program in nursing team's continuous professional development	Intervention study	Rapid cycle cardiac arrest simulation is an effective strategy to increase nurses' confidence and knowledge in performing cardiopulmonary resuscitation.
Spinelli et al. (2021)	Evaluation of healthcare professionals' knowledge and experience in CPR and early defibrillation: an internal survey	Prospective observational study	Training resulted in a significant increase in knowledge level regarding the overall management of IHCA in hospital staff. Simple interventions such as informative meetings significantly improved knowledge about IHCA, potentially leading to reduced morbidity and mortality.
Silva et al. (2021)	Basic life support: evaluation of knowledge considering active teaching strategies	Quasi-experimental intervention study	The integration of adopted strategies can enhance nursing knowledge in Basic Life Support for adult patients, emphasizing critical thinking development, clinical judgment stimulation, reflective discussion, and active participation in their learning process, factors positively impacting cognitive skill acquisition/knowledge of individuals.
Uhm et al. (2021)	Factors affecting attitudes towards defibrillator use among clinical nurses in South Korea	Observational quantitative study	To improve clinical nurses' attitudes towards defibrillator use, enhancing self-confidence, image, and work adequacy through continuous assessment and defibrillation training are necessary. Additionally,

			relevant institutional support and systematic guidelines should be provided.
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**SOURCE:** Research Data, (2024).

Most of the analyzed studies were conducted in Brazil (60%). This may reflect a significant focus on improving cardiopulmonary resuscitation practices in the Brazilian context, where there is a need to enhance the training and knowledge of healthcare professionals. The United States and other countries (Italy and South Korea) contributed additional studies, indicating a global concern. English was the predominant language in the studies (73%), facilitating the international dissemination and access to research. Three studies (27%) were published in Portuguese, highlighting the relevance of making the results accessible to the local and regional Portuguese-speaking community. The studies were equally distributed between BDNF and Medline (40% each), with LILACS covering the remaining 20%.

This distribution shows a variety of data sources used to gather relevant information on cardiopulmonary resuscitation practices, with a preference for nursing and public health databases. Most of the studies (60%) were classified as Level 4, indicating that much of the evidence comes from observational studies without control, reflecting the exploratory and descriptive nature of research in this area. Two studies (20%) were classified as Level 2, from controlled clinical trials without randomization, indicating a more rigorous approach to testing interventions. Two studies were classified as Level 5 (20%), based on expert opinions and case reports, suggesting that there is room for more high-quality research to strengthen the evidence in this field.

Following this line of reasoning, Brandão et al. (2020) emphasize that nurses are also responsible for maintaining a sequential record of CPR, including the time of cardiac arrest identification, the medications used with their respective dosages, and the total duration of the cycles. The nurse, using their authority, can adjust the roles of any nursing team member as necessary and, under atypical circumstances, even replace them. Additionally, the nurse is responsible for coordinating the transfer of the patient to other sectors of the institution and providing all relevant information to the family members.

Cardiopulmonary arrest (CPA) is a medical emergency that requires a rapid and effective response. The role of the nurse is crucial in this context, as it can make the difference between life and death for the patient. Studies such as those by Moura et al. (2019) and Guskuma et al. (2019) highlight the importance of the nursing team's knowledge and readiness to act in CPA situations. These studies, conducted in Brazil, demonstrate the ongoing need for training and updating to ensure that nurses are prepared to perform both basic and advanced life support interventions.

In Moura et al. (2019), the quantitative and descriptive research revealed that the nursing team had a low percentage of completely correct responses in CPA situations. This result underscores the urgent need for continuous training programs aimed at standardizing procedures and improving the care provided to critically ill patients. Effective nursing performance during a CPA not only increases survival chances but also improves post-resuscitation quality of life.

Guskuma et al. (2019) also conducted a cross-sectional and quantitative study that showed a decline in nurses' knowledge about cardiopulmonary resuscitation (CPR) over time. Socioeconomic and professional factors were associated with this decline in knowledge, suggesting that continuous education should be tailored to the specific needs of each group. This study reinforces the importance of keeping nurses updated with the latest guidelines and CPR practices.

Gutterman et al. (2019) in the United States conducted qualitative research comparing hospitals with different performances in response to CPA. Although it did not establish causality, the study suggested that nurses play a fundamental role in an effective response to CPA. Investigating how best to support nurses in their roles could optimize patient outcomes. This implies not only regular training but also a work environment that values and facilitates the prompt and competent performance of these professionals.

Brandão et al. (2020) conducted a descriptive and quantitative study that evaluated the self-confidence, knowledge, and skills of nursing interns regarding CPR. The results showed significant weaknesses, highlighting the need for new teaching methodologies that ensure the effectiveness of learning. The implementation of practical simulations and other active teaching techniques can be an effective solution to improve the preparation of future nurses.

Santiago et al. (2020) explored the interventions of nursing professionals in CPA cases through a descriptive qualitative study. The results indicated that many professionals are still not adequately qualified to attend to CPA victims. Continuous improvement of procedures and the qualification of these professionals are essential to increase the survival rate of patients. This study emphasizes the importance of training programs that include both theory and intensive practice.

Assis et al. (2021) conducted a descriptive and exploratory study with a quantitative approach, focusing on the knowledge of nursing staff in intensive care units about CPR. The findings showed that many professionals base their practices on outdated guidelines, highlighting the need for constant updating. The study

suggests that the implementation of continuing education programs and periodic reviews of guidelines can significantly improve clinical practice.

Ozkara et al. (2021) in the United States conducted an intervention study evaluating the incorporation of a rapid cycle deliberate practice (RCDP) cardiac arrest simulation program. The results showed that this strategy is effective in increasing nurses' confidence and knowledge in performing CPR. This type of practical intervention is crucial for preparing nurses for real situations where speed and accuracy are essential.

Spinelli et al. (2021) in Italy conducted a prospective observational study assessing the knowledge and experience of healthcare professionals in CPR and early defibrillation. The research showed that simple interventions, such as informational meetings, can result in a significant increase in knowledge about the management of in-hospital cardiac arrest (IHCA). This study highlights the importance of ongoing and accessible educational initiatives to improve healthcare professionals' preparedness.

Silva et al. (2021) in Brazil, through a quasi-experimental study, evaluated the articulation of active teaching strategies in basic life support. The results indicated that these strategies enhance the development of nursing knowledge, promoting critical thinking and clinical judgment. This type of active educational approach is vital to ensure that nurses are well-prepared to respond to CPA emergencies.

Uhm et al. (2021) in South Korea, in a quantitative observational study, identified factors affecting clinical nurses' attitudes towards the use of defibrillators. Improving self-confidence, professional image, and job suitability through continuous evaluation and retraining is essential. Additionally, relevant institutional support and systematic guidelines are necessary to strengthen nurses' preparedness.

Cardiopulmonary arrest (CPA) in the hospital setting presents several challenges that impact the effectiveness of the response and, consequently, patient outcomes. Studies like those by Moura et al. (2019) and Guskuma et al. (2019) highlight the complexity of this medical emergency and the need for adequate nursing team preparation. CPA requires a rapid and coordinated response, and any failure in this process can drastically reduce survival chances.

One of the main challenges, as revealed by Moura et al. (2019), is the insufficient knowledge of the nursing team. The quantitative and descriptive study conducted in Brazil showed that many nurses are not fully capable of effectively responding to CPA situations. The lack of completely correct responses indicates an urgent need for regular and updated training to ensure that all team members are prepared to act uniformly and efficiently.

Guskuma et al. (2019) identified another significant challenge: the deterioration of knowledge over time. Their cross-sectional study showed that knowledge about cardiopulmonary resuscitation (CPR) declines over time, especially when not reinforced by periodic training. This decline is associated with socioeconomic and professional factors, suggesting that continuing education programs need to be tailored to address these variables and ensure that nurses maintain their skills.

Guetterman et al. (2019) in the United States identified the lack of adequate support for nurses as a significant challenge in their qualitative research comparing hospitals with different performances in response to CPA. The lack of resources, insufficient training, and inadequate organizational support can compromise the effectiveness of the response to CPA. Improving support for nurses, both in terms of resources and training, is crucial for optimizing patient outcomes.

Brandão et al. (2020) highlighted weaknesses in the knowledge and skills of nursing interns. Their descriptive and quantitative study revealed that many interns do not have the necessary confidence to perform CPR effectively. This challenge can be mitigated through the implementation of new teaching methodologies that ensure the effectiveness of the learning process, such as practical simulations and active teaching techniques, which can significantly improve the preparation of future nurses.

Santiago et al. (2020) emphasized the lack of adequate qualification of nursing professionals working in emergencies. The qualitative study showed that many nurses are not sufficiently prepared to attend to CPA victims, negatively impacting patient survival rates. To overcome this challenge, it is essential to invest in qualification and continuous improvement programs that include both theory and intensive practice.

Assis et al. (2021) identified an additional challenge: the reliance on outdated guidelines. Their descriptive and exploratory study with a quantitative approach showed that many nurses base their practices on obsolete information. This emphasizes the importance of keeping healthcare professionals updated with the latest guidelines and best practices in CPR through continuing education programs and periodic guideline reviews.

The intervention study by Ozkara et al. (2021) in the United States demonstrated that rapid cycle deliberate practice (RCDP) cardiac arrest simulation is an effective strategy to overcome some of these challenges. However, implementing and maintaining such simulation programs can be challenging due to resource and time constraints. Investing in training infrastructures that allow frequent and accessible simulations is essential for improving nurses' confidence and knowledge.

Spinelli et al. (2021) in Italy identified the lack of continuous educational initiatives as a significant challenge. Their prospective observational study showed that even simple interventions, such as informational meetings, can significantly increase knowledge about CPA management. Therefore, promoting accessible and continuous educational initiatives within hospitals is vital for improving healthcare professionals' preparedness.

Silva et al. (2021) in Brazil explored the effectiveness of active teaching strategies in basic life support. The quasi-experimental study demonstrated that these strategies could significantly improve the development of knowledge and skills. However, implementing these strategies requires an institutional commitment to continuous education and professional development, which can be challenging in resource-limited environments.

Uhm et al. (2021) in South Korea addressed factors affecting clinical nurses' attitudes towards the use of defibrillators. Their quantitative observational study showed that improving self-confidence and professional image, along with relevant institutional support, is essential. The challenge lies in creating a work environment that provides not only technical training but also emotional and psychological support so that nurses feel confident and competent in their roles.

#### **IV. Conclusion**

The study comprehensively analyzed the challenges faced by nurses in providing first aid for cardiopulmonary resuscitation (CPR), highlighting the importance of continuous and adequate preparation. By exploring various studies conducted in different geographical and methodological contexts, it was possible to identify the main barriers, such as the lack of updated knowledge, the need for regular training, and the importance of institutional support. The analysis demonstrated that these challenges can be mitigated through continuing education programs, practical simulations, and a work environment that values and supports nursing professionals. Based on the review, it can be concluded that the study's objective was achieved.

The investigation provided a detailed insight into the factors impacting the effectiveness of CPR response and possible strategies to improve nurses' performance. This analysis not only reaffirms the need for investments in training and resources but also offers valuable knowledge for the development of policies and practices that can increase the survival rate and quality of life of patients affected by CPR. Future research is essential to continue advancing the improvement of CPR assistance. Studies are suggested to explore the effectiveness of different training methods and continuing education in various hospital settings, comparing the application of high-fidelity simulations with other teaching techniques. Additionally, investigations into the impact of institutional and psychological support for nurses can provide further insights to create work environments that maximize the effectiveness of CPR response.