

# Knowledge of Nursing Students about Cardiorespiratory Arrest

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## Abstract

This study aimed to investigate the knowledge of nursing students about cardiorespiratory arrest. It consisted in a qualitative research with 29 nursing students of the Federal University of Campina Grande, campus Cajazeiras, Paraíba, Brazil. A semi-structured interview was used for data collection, which took place in December 2014 after approval by the Ethics and Research Committee of the institution of education. The technique of Collective Subject Discourse was used for data analysis. Unpreparedness and insecurity of academics with respect to cardiorespiratory arrest were evident. The lack of practice makes them afraid and they point to the educational institution as responsible for not providing environments to better prepare them for stressful situations. Therefore, there is a need for strengthening the academic training of future nurses by increasing the opportunities for practice so that students get familiar with the reality they will face and, this way, this gap in the nursing training may be reduced.

## Introduction

Nursing is a science and it seeks improvement in care and progress in the actions by which it is responsible, notably in the urgency and emergency areas, pre and intra-hospital areas, and especially in cases of Cardiorespiratory Arrest (CRA), an event that must be inserted in the basic and/or advanced support for life. Such actions need to be carried out efficiently and effectively in order to ensure the high quality of the care provided.

## Keywords

Nursing Students; Cardiac Arrest; Cardiopulmonary Resuscitation.

Cardiovascular diseases (CVD) are among the main factors triggering CRA. These have been the leading cause of death in Brazil since 1970, particularly due to the reduction in mortality from infectious and parasitic diseases associated with the prevalence of risk factors for cardiovascular diseases. The World Health Organization (WHO) considers obesity, smoking, dyslipidemia, insufficient intake of fruits and vegetables as the main responsible for the majority of deaths from cardiovascular diseases [1].

CRA is considered a worldwide public health problem. This keeps causing many deaths in despite of the advances of recent years [2]. CRA can be defined as a sudden and unexpected condition of absolute deficiency of tissue oxygenation due to disruption of the respiratory function or inefficiency of the circulatory system [3].

Among the main emergencies that threaten life, CRA is considered the most complex because the chance of survival is directly linked to the care offered, which must be fast, safe and effective [4].

CRA is considered also a clinical urgency. Its treatment consists in preserve the life, relieve suffering and restore health. This service should be performed by a team trained to undertake such action. Thus, the role of the nurse stands out, as this professional is often responsible for recognizing the CRA and starting the Basic Life Support (BLS) and assisting in the Advanced Life Support (ALS). For this reason, professionals should have knowledge and training in resuscitation, in order to prevent losses in the support provided [4]. It is understood that the skills for such activities must be learned during the training process of future nurses, that is, in institutions of higher education.

Thus, the present study will address the knowledge of nursing students on the CRA in order to understand how this issue is being approached in the formation of nursing students. The research will help to understand the facilities and present gaps in training of nurses concerning this subject.

Therefore, the present investigation aims to ascertain the knowledge of nursing students about the cardiorespiratory arrest.

## Method

The participants of this research consisted of 29 nursing students of the Federal University of Campina Grande campus Cajazeiras. As inclusion criteria, only students enrolled in the eighth and ninth period (semester) of the course and who were enrolled in the disciplines "Supervised Internship I - Basic Health Network" and "Supervised Internship II - Hospital Network". The choice of the eighth and ninth periods is given to fact that these students have already attended all the theoretical academic disciplines. As exclusion criteria, students who had already did an extra-university course on Basic Life Support and Advanced Life in Cardiopulmonary Resuscitation were excluded.

Data collection was performed using semi-structured interviews. These, at the same time that value the presence of the investigator, provide all possible perspectives for the informant to reach the necessary spontaneity, enriching the investigation [5].

Interviews were carried out individually, based on guiding questions on the subject and respecting the free expression of their representations. The interviews took place in December 2014. Suspension of data collection occurred from the moment that the theoretical saturation was identified. The interviews were recorded with permission of respondents. Before starting transcription, interviews were heard several times in order to understand the words.

The methodological process known as Collective Subject Discourse (CSD), second Lefèvre and Lefèvre, which is a tool that enables the representation of thought of a particular group, was adopted to proceed with ordination and organization of empirical data produced by the semi-structured interviews with selected nurses in this investiga-

tion. This methodology proposes the sum of ideas not in a numerical manner, but operationalizing in a methodological manner the expression of the collective thought through discourse [6].

The CSD's proposal, according Lefèvre and Lefèvre, consists basically in analyze the material built by a community through testimonials and then extract the Central Ideas (CI) and their key-expressions (KEX). At the end, the content of responses with similar meaning is gathered in discourses-synthesis written in the first person singular [6].

The KEX can be defined as fragments, excerpts or verbatim transcripts of the discourse that must be highlighted by the researcher and that reveal the essence of the whole of the observed discourse. In turn, CI is a name or linguistic expression that reveals and describes the meaning of each analyzed discourse and of each homogenous set of KEX the most concise and precise as possible, which will give rise later to the CSD [6].

Regarding the analysis of content of the interviews, initially, there was a brief reading of the lines in order to understand all the transcripts. Subsequently, successive readings were necessary to make it possible to identify the units of meaning related to guiding questions that composed the interview script. Then, KEX of each response were identified, represented by literal words of nurses. These expressions built up the CI which were organized and will be presented in four categories with respective CSD.

This research started after the approval of the project by the Research Ethics Committee (REC) of the Federal University of Campina Grande campus Cajazeiras under opinion nº 883,162. Participation in the study was initiated by signing the Informed Consent (IC), prepared in two copies, one signed by the invited participant and the other by the main researcher. In both copies, the telephone contact of those responsible for the research and the telephone contact of the REC were included.

The study respected the human condition and complied with all requirements of autonomy, non-maleficence, justice and equity, among other explicit requirements in Resolution 466/2012 of the Ministry of Health [7].

## Results

Based on the speeches of the students about the knowledge on the cardiorespiratory arrest, it was possible to identify four discourses that will be presented and discussed with their respective CSD.

The first speech focuses on the inaccuracy of academics in identifying a Cardiopulmonary Arrest. Eleven students participated in this CSD.

The **CSD 02** deals with the accurate answers on how to provide the best care for a patient in situation of CRA. Eight academics participated in the CSD.

### Inaccuracy in identifying the Cardiorespiratory Arrest

*Symptoms will be the chest pain accompanied by sweating, cold and clammy skin, tachypnea with increased respiratory rate, tachycardia or bradycardia can occur, I identify one patient with CRA (Cardiorespiratory Arrest) first checking cyanosis of the extremities. Another point is that we see the issue of low blood pressure, and decreased peripheral perfusion which is a good sign to describe the cardiac arrest, then the patient will present a sudden illness, with thin and weak pulse, he will present absence of heartbeat, fatigue, absence of cardiac auscultation, peripheral pulse almost nil, chest pain, troubled breathing, cough, dizziness, headache, shortness of breath, paleness, then you will identify first checking peripheral pulses and the absence of the pulse will also be an indication of CRA.*

CSD 01.

### Accurate answers about procedures in situation of Cardiorespiratory Arrest

*Regardless the location, I would first make a brief analysis of the space, because case the protocol says that the first thing to do is to assure the safety of the scene, not to put the lives of the professional at risk and complicate even more the situation. Approach the victim, identify the cardiac arrest, if confirmed, call the emergency specialized service, open space by asking people to step away, I would leave the victim lying and begin compressions, to avoid losing muscle activity. Then, for the maneuvers, I would follow the CAB, for compressions, we do usually 30 compressions to 2 breaths if you have assistance, but if you're alone, try to do 100 compressions per minute, just to avoid suspension of blood supply to the brain and to reduce the victim's sequels in the case of being accompanied and perceive a CRA (Cardiorespiratory Arrest), you ask to call the emergency room and begin to provide assistance. According to the new protocol, you can do just compressions if you do not know or feel insecure to do the mouth-mouth resuscitation, but the compressions must be firm and continuous. It is also important, first of all, to contact the patient, trying to alert him, to see if he is really still, never get exposed to the patient if you don't know him. Meanwhile, the individual who is asking for help must say that it is a case of CRA and ask to bring the device, the AED (Automated External Defibrillator). When the patient does not resurrect, you can use the AED and when other professionals come, they will act performing shock followed by massage. There are also those techniques to aid in breathing, if I'm not mistaken, the Shin-lift and Shaw-thrust, and you can also use the guedel cannula in unconscious patients to prevent the fall of the tongue.*

CSD 02.

The **discourse 03** shows the insecurity of academics when performing a cardiopulmonary resuscitation (CPR) or witnessing a cardiac arrest. Eleven academics participated in the CSD.

In the fourth category, suggestions for the improvement of the content in academic training stand out. Fourteen students participated in the CSD.

### Insecurity at witnessing the Cardiorespiratory Arres

*I do not feel fully prepared, no, because in many situations I delayed to act consistently, because I did not have much practice or much knowledge of the situation, since the practice that we have in college is too short, and this kind of thing you will only develop with experience, when you start to work. Well, I have witnessed one CRA (Cardiorespiratory Arrest) and when I arrived, the patient was already in arrest, then I even made the massage there and it just did not work out, he did not return, he was also an old man. I remember one thing that was wrong was that the patient was on a stretcher lying on a soft mattress, what was making it difficult. So, we know a lot of things in theory, but in practice it turns out that we do not perform those things. The lack of practice also makes you insecure about what you're doing. I even think I could worsen the situation, harm the patient, you know, I don't have sufficient ability yet, to come across such a situation and to help really, but the solution is to rescue what I was theoretically taught, and put that in practice. It's complicated, it is difficult to perform the action, but I try to apply everything I've learned, even not feeling confident, this insecurity of mine is the lack of practice mainly, I confess that my personality, in relation to a matter of urgency and emergency, I'm not so skilled, especially in an emergency I do not feel so confident*

CSD 03.

### Suggestions to improve the content of academic training

*More practices, because it is the practice what actually teaches students, more hours dedicated to practical classes, because I think the length of this kind of class is very short. More teachers to give more support are also needed, because only one teacher has too many responsibilities. [...] It is interesting to correlate theory with practice, which is the largest deficit in the graduation, that I perceive and also other colleagues of mine. These practical classes should be worked in laboratories prepared for students to feel prepared to work, make them to put their hands to work, do the procedures in a manner at least like the reality, in the time that this is needed. Also, some videos would do well, a dynamic class, covering a fact as if it was real, and not fictional. I believe that a simulation would teach much more than just a simulation in the classroom.*

CSD 04.

## Discussions

About the CSD01, the fragility in the identification of a Cardiorespiratory Arrest (CRA), as the reported symptoms do not match the CRA itself, but other diseases and conditions linked to urgencies and emergencies related to the cardiopulmonary system.

According to the American Heart Association (AHA), the CRA is the cessation of circulation and respiration and it is recognized by the absence of heartbeat and breathing in an unconscious patient[8]. The recognition of CRA is done through the triad of unconsciousness; absence breathing and absence of pulse (carotid or femoral) [9].

In turn, the shock, a situation confused with CRA by students, can be defined as a clinical syndrome characterized by imbalance between the supply

of cell and tissue oxygen and nutrients and their consumption. The main signs of organ dysfunction affect the cardiovascular system (which can lead to CRA), central nervous system, respiratory system, digestive system, urinary system, hematologic system and the skin [9-10].

According to the authors cited above, the clinical signs of organ dysfunction in multiple systems due to poor tissue perfusion as a result of shock are: Change in the level of consciousness (lowering, agitation, confusion framework, etc.); arterial hypotension, slowed capillary refill time, cold extremities, increases in lactate levels (>2 mmol/L); respiratory distress (tachypnea, dyspnea, etc.), hypoxia, hyperventilation or hypoventilation, stasis, intestinal obstruction, elevated liver enzymes, loss of liver function, oliguria, acute renal failure, thrombocytopenia, thrombosis, extended clotting times, a tendency to bleeding diathesis, cold and clammy skin, livedo reticularis, etc. Some of these elements have been highlighted in the CSD of students as CRA characteristics.

Therefore, the incoherence of speech to describe the symptoms of CRA is notable, since according to the AHA, the symptoms are unconsciousness; absence of central pulse and absence of breathing. Thus, what could be observed was a prevalent correlation of CRA with shock state [11].

Thus, this shows the unpreparedness of academics in identifying a CRA according to its symptoms, calling for an indispensable critical reflection and reformulation in terms of discipline as well as in terms of Pedagogical Political Project of the course.

The CSD02 reveals coherence regarding the care provided to the patient victim of CRA, either alone or accompanied. It identifies also the knowledge of academics in relation to the protocol of Basic Life Support (BLS) of the American Heart Association (AHA), when they state that they should follow the CAB and prioritize chest compressions.

According to the Advanced Cardiovascular Life Support (ACLS) of the AHA[11], the evaluation of

BLS is a systemic approach that emphasizes the CPR and early defibrillation, and does not include advanced interventions such as advanced airway techniques or administration of medications. The implementation of evaluation actions of BLS significantly increases the possibility of survival of the patient, as well as a good neurological outcome.

In the speech reported above one can see a systemic approach to perform the BLS. Knowledge of academics on how to act before a possible victim of CRA is also seen, whether in the hospital or extra-hospital environment.

The CSD02 goes against the CSD01, since accurate answers are approached, but there are more students in the construction of CSD01, what shows that there are more flaws revealed by the inaccurate answers than potential in the accurate answers.

In 2009, the protocol included the alarming of a team of advanced support and request defibrillator followed by two ventilations followed by 30 chest compressions, based on the AHA algorithm in attendance to CRA. However, in recent times, it has been found that the rate of survival posterior a CRA is three times higher in people who have been subjected only to chest compressions [12].

With this change in the algorithm, compressions began to be priority in caring for victims of CRA, once its benefits were proved to be greater when time interval is reduced to its realization. This change in conduct is part of the new guidelines of the International Liaison Committee on Resuscitation (ILCOR) that in 2010 were validated to all the world [13], what was confirmed in this study by the CSD of students.

Finally, it is important to note that the procedures in CRA based on ALS were not mentioned in the CSD02. This shows that academics are still limited to the most simple procedures, of lower complexity, in this critical situation of care.

Lack of self-confidence to perform procedures related to CRA is observed in the CSD03. This insecurity is justified by the students as a result of the few practical experiences. Another point identified

in the discourse was the fear of harming the victim of CRA. The unpreparedness to act in this stressful situation is thus identified.

In the internship field, as academics, the witnessing of a cardiac arrest brings up mixed feelings, such as fear, insecurity and lack of preparation to act on this critical situation. The theoretical knowledge acquired by students in the classroom is not enough to make them actively and safely participate in the care of CRA cases [14].

This theme paralyzes the academics by their imagining that an incorrect conduct may cost the life of a human being, and that ability and quick reasoning are not the only requirements for effective care [14]. The association between theory and practice is necessary, which must be essential when it comes to assist a victim of CRA. The above confirms what is stated in the discourse, when the subject reports on the difficulty and delay to act coherently.

It was noticed that the acquired theoretical knowledge to date by the trainees was not enough to make them participate actively and safely in a situation of cardiorespiratory arrest, what is also observed in another study [13].

The lack of confidence causes stress, fatigue, anxiety and depression. All these situations put the patient's safety as well as the staff's and students' safety at risk, requiring interventions to prevent them.

It is observed in CSD04 that one of the suggestions is related to the gap in practical experience. So there is the need to expand the amount of theoretical and practical classes, as well as use of diverse kinds of training, not only in the laboratory or in the hospital, but also at the services of the Emergency Care Units (ECUs), SAMU (Emergency Mobile Care Service) and pediatric services.

The practice decreases the feelings of fear and insecurity existing among academics. To witness emergency situations that will certainly come in the future is something that will diminish such feelings, since the nurse will be ready and will have expe-

rience with some procedures to offer proper care. The experience of the traineeship is very important to know these manifestations, because with that, teachers may work better the fears, anxiety and emotions experienced by students on contact with the environment where critical care is developed [15].

Another point to be discussed is the difficulty in getting practical fields, marked with overcrowding of the space, once Nursing colleges are too many and health practices scenarios are few, interfering with the formation process of students [16].

Furthermore, the difficulty in the practice field causes many courses to develop some activities in virtual laboratories, but this leads the student to become distant from the customer, making the process of training bookish, without adherence to health practices.

Perhaps this explains to some extent why few practices are reported in the discourse. In fact there are few scenarios for practice available for nursing students in the region, which end up overcrowding health institutions. One of the solutions of institutions of higher education in health to meet the need is to equip laboratories to simulate real situations. It is essential to expand the network of partnerships with health institutions in order to increase the range of options of practical fields and therefore increase the quality of the learning process in situations of BLS and ALS in cases of CRA.

## Conclusion

This study aimed to ascertain the knowledge of nursing students from a public institution of higher education about Cardiorespiratory Arrest (CRA). It prioritized academics of the eighth and ninth period (consecutive semesters of the course), as they had already gone through all the theoretical and practical disciplines.

The analysis revealed the unpreparedness of academics, as well as their insecurities related to CRA. The lack of practices contribute to make them

fearful, blaming the educational institution for not providing environments that better prepare them to stressful situations of emergencies, which require knowledge and ability to act quickly when assisting the patient.

Flaws in knowledge about the signs of CRA were noted in the present study, and these may jeopardize patient safety.

Importantly, the results of this research have limitations. The study was carried out with only two group of students from a public institution of higher education, and thus the data cannot be generalizes to other groups and to all other public institutions of higher education in Brazil. The offer of more practical scenarios in health for students of this particular area greatly depends on the plan of class built by professors, and the plan of course defined by the institutions, as well as depends on the reality of the region.

This area also requires much more exploration, because academic environment is the basis for professional training and ingression in the labor market. Therefore, institutions of education must constantly seek strategies to improve the process of training in order to meet the demands imposed by the new global context, as well as they must investigate how such training is being conducted. Professionals should be able to face the challenges typical of the healthcare offered by them. They should be prepared to deal with this with awareness and critical thinking.

For this reason, the present research has the purpose of awakening and sensitizing new discussions on the academic scene about how the training of new nurses is being done by focusing on the evaluation of the knowledge of students about working in emergencies and health services, since these will be part of the current labor market. Finally, there is the need to carry out further research, especially of interventionist nature, so as to change a certain reality.

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