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The Impact Of The Simulation Using Role-Playing In Developing Resuscitation Care And Leadership Skills For Health Sciences Students : Case Of Future "Midwives"

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ABSTRACT
Simulation using role-playing is a recurrent didactic strategy among the training activities applied in the field of education. In health sciences training, communication and interaction between students and the various health professionalsinvolved in emergenciesand resuscitation care is one of the strategic pillars of health science education in general and midwifery training in particular. This article reports on the implementation and discusses leadership training in emergency and resuscitation care with simulationusingrole-playing.This approach aimed at increasing awareness of one's own responsibility and that of team member, as it contribute to endurance and development of team management skills in emergency care situations related to resuscitation of pregnant patients in obstetrics units. 19 health science students « future midwives »were involved in the study which was conducted from 20 February to 20 March 2023 at the Higher Institute of Nursing Professions and Health Techniques in Morocco. The results showed that the students were very satisfied with the effectiveness of the role-playing simulation training in improving their professional skills, and feel that they could take on their future function with more ease. Moreover, such a process seems to motivate students to learn and provide them with an individualized approach.

Keywords: care, emergencies, leadership, resuscitation, role-playing, simulation, skills, teamwork

INTRODUCTION

The death of a woman during pregnancy or childbirth is always experienced as a tragedy, not only for families, but also for health care staff. Emergency and resuscitation care are one of the main pillars for reducing maternal and neonatal mortality based on human capital development (Austad et al., 2017) and remains a complex component of the health sciences, requiring a series of appropriate training courses to ensure optimal clinical management (Miguens et al., 2015).

The level of training of a specialist is determined by the availability of a combination of theoretical knowledge and practical skills. The quality of care for patients with a life-threatening conditions depends on their availability (Price et al, 2008). The frequency of errors is directly related to the quality of the health professional's training. Training is a priority for health professionals to reduce the incidence of diagnostic and interventional errors, which can negatively affect the clinical management of patients (Merriel et al., 2019).

Today`s healthcare system is constantly in search of better quality and patient safety. In this context, it is becoming essential for teaching methods to be developed in order to improve the performance of healthcare staff. The transition from theoretical learning to direct application in the field is generally unacceptable: "Never the first time on the patient » (Jabre et al., 2011).

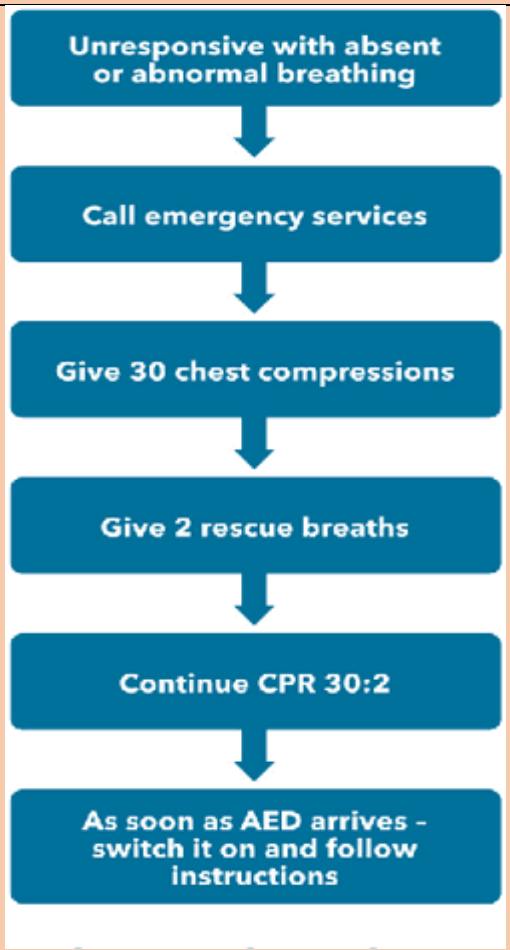
Simulation is the artificial representation of a complex real-world process with sufficient fidelity with the aim to facilitate learning through immersion, reflection, feedback, and practice minus the risks inherent in a similar real-life experience. It has made it possible to increase safety in all areas, by improving the individual practices of those involved in a system, as well as collective practices (crisis management, communication between staff) (Datta et al., 2012).

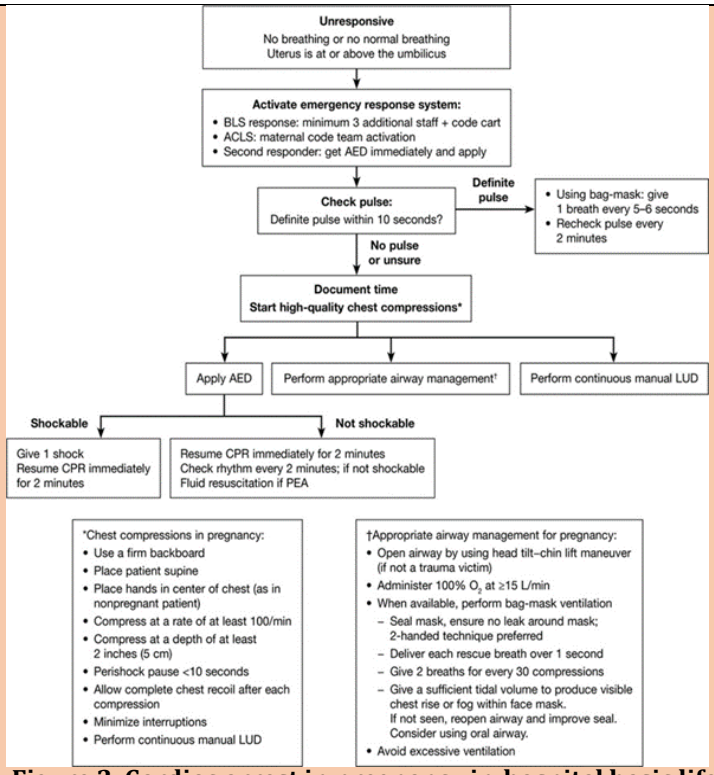
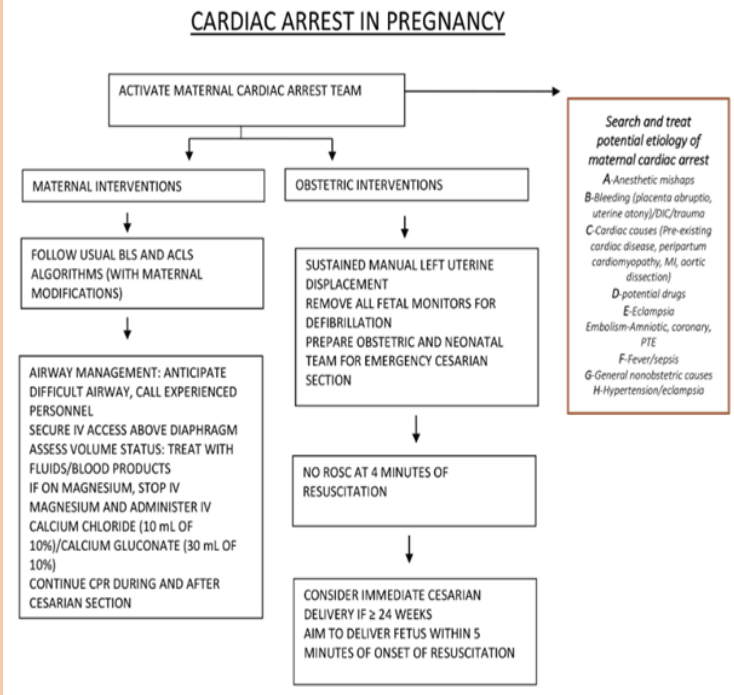
Simulation-based learning involves creating a dynamic patient care situation that mimics reality. It involves reproducing the entire patient care or management situation, enabling learners to challenge and test not only their technical skills but also their ability to make diagnostic hypotheses in real time, and to follow the procedural algorithms required for effective treatment. The drafting of a credible and realistic scenario forms the basis of this teaching and should provide learners with multiple opportunities to demonstrate their technical and non-technical skills (Lateef, 2010).

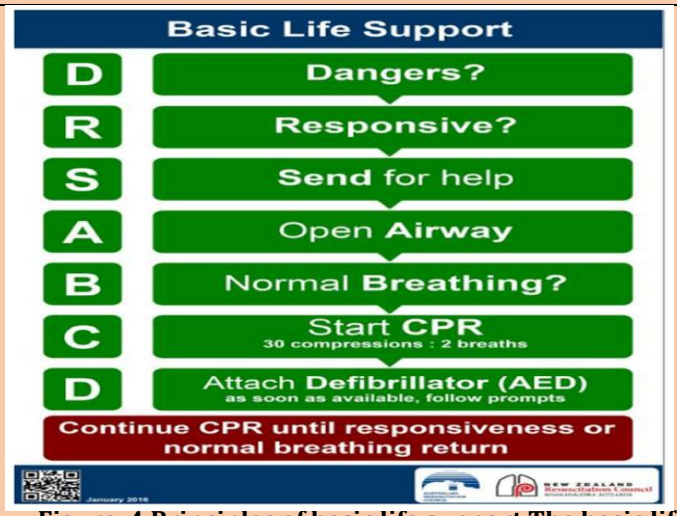
A recreated situation (scenario) should allow the student to face one or more problems orobstacles related to previously defined learning objectives.The main learning objectives for a given scenario can be grouped into two broad categories:
Medical" objectives: These are relevant to patient diagnosis and treatment. These goals are set based on recommendations or clear evidence from the literature.
"Non-Medical, Non-Technical" objectives: technical skills represent the intellectual, social, and personal resources needed to lead a team in crisis situations. For example, the ability to lead a group (leadership), the ability to communicate with members of the care team, or simply the ability to listen and speak to patients (Bambini et al., 2009).
One of the challenges in emergency and resuscitation care is to quickly build a team led by a leader and capable of providing quality care (Rosenman et al., 2016). Role-play simulation is a type of "learning and teaching" specifically designed to shape students' individual abilities and behaviour, by finding solutions to interpersonal interactions (Pourghaznein et al., 2015). Role playing is increasingly used in learning as a type of simulation that helps students to learn how to make decisions in difficult clinical situations (Yu & Kang, 2017).
Role playing scenarios provide a safe environment for teaching, and active student participation in the learning process (Kleinsmith et al., 2015). Role play is considered to be an effective strategy that supports independent learning and increases student motivation (Chua et al., 2021).
The leadership role is essential in practice, as it is very often necessary to organise and coordinate many health professionals in emergency and resuscitation care. Leadership is a process of direct individual influence on the community, which motivates and guides team members to action (Panadero, 2013). Leadership is a form of management and control of centralized tasks in which one person influences others (Hazy& Uhl-Bien, 2015).
Leadership training is a complex process. It promotes the creation of an effective organisation capable of delivering high quality results (Cruz-Ortiz, Salanova & Martínez., 2013). The goal of this process is to develop a leader who can take charge of the team in a distressed situation.During the training, the candidate leader not only acquires solid knowledge in the field of health sciences, but also learns group management, communication, analysis and synthesis. He works on himself, and acquires new personal qualities.
Simulation team training assisted the team members in reflecting on and appraising their leadership skills and reviewing the role of leadership in an emergency (Gumet al., 2010).
There is an increased need for health professionals prepared to work effectively in complex clinical situations (Zhang,2023). There is an increasing need to develop innovative training methods for health professionals, according to emergency and resuscitation skills (Ruesseler et al., 2010).
Since 2013, In Moroccan institutes Nursing Professions and Technical Health (ISPITS), the basic training system of health sciences students« future midwives » underwent a major reform in accordance with the Bologna Agreement, This new approach has created educational development opportunities focused on improving and enhancing the skills of students through high quality of training (Décret-Création_ISPITS, 2013).
Recognizing the need to improve maternal and child health, the Moroccan Ministry of Health and Social Protection has invested in training midwives since the 1980s to meet the changing needs of the population and ever-changing educational approaches. As a result, in 2015 a training program based on a competency-based approach was developed and measures were established to facilitate its implementation (Abouzaj, 2019).
Access to quality healthcare is a basic human right. Women and children are particularly vulnerable when it comes to health, and many countries and settings lack the resources to ensure optimal health. "Increasing investment in midwives is key to making this right a reality for women everywhere," said UNFPA Executive Director Babatunde Osotihin (State of the World's Midwifery,2021)
When midwives are trained according to international standards, they play an important role in achieving the Sustainable Development Goals. It can provide about 90% ofessential care for women and newborns and reduce maternal and neonatal deaths by two-thirds (Nove et al., 2021).
Morocco's training program for health sciences studentscase of « future midwives » aims to train midwives to practice their profession independently in order to reduce maternal and child morbidity and mortality.This programme based on a competency-based approach, encourages the development of technical and non-technical skills. (Référentiel de formation de la sage-femme au Maroc, 2021). The approach adopted to identify the teaching activities focused on learning rather than teaching, in order to give students more responsibility for their own learning and encourage them to play a decisive role in developing their skills, abilities and competences, under the guidance and supervision of the instructor. In this context, the future midwives should be skilled of emergency and resuscitation care, techniques and obstetric interventions (prenatal, antenatal and postnatal) according to the context and situation, in accordance with the the emergency care algorithms used.(Guide pédagogique à l'usage des enseignantes sages-femmes, 2021).
One of the serious care practices that the future midwife should participate in managing is cardiopulmonary arrest in pregnant women.This critical situation is rare but extremely severe and requires multidisciplinary management (Millingtonet al., 2019). Cardiopulmonary resuscitation requires specific considerations and particularities for pregnant women, therefore simulation-based training in maternal cardiopulmonary

resuscitation and the development of defined algorithms should be encouraged and disseminated to all healthcare staff involved in the care of pregnant patients (Jeejeebhoy et al., 2015).
In the literature available around the world, we have collected several algorithms and recommendations for the management of this critical state (table 1).

Table 1 : Comparative data on resuscitation practices from studies conducted in Western, Asian and Australian countries

Continent/ Country/ Association	Article/ Authors/ years	Resuscitation practices
Europe	European Resuscitation Council Guidelines 2021: Executive summary G.D. Perkins, et al (2015)	 **Figure 1. Adult basic life support(BLS) algorithm**

United States American Heart Association (AHA)	Cardiac arrest in pregnancy: A scientific statement from the American heart association Jeejeebhoy et al (2015)	 **Figure 2. Cardiac arrest in pregnancy in-hospital basic life support (BLS) algorithm: simultaneous C-A-B-U (chest compressions/current-airway-breathing-uterine displacement). ACLS indicates advanced cardiovascular life support; AED, automated external defibrillator; CPR, cardiopulmonary resuscitation; LUD, left uterine displacement; and PEA, pulseless electric activity.**
India China	Challenges of Cardiopulmonary Resuscitation during Pregnancy Durga et al (2019)	 **Figure .3 Modifications for resuscitation of cardiac arrest in pregnancy. ACLS, advanced cardiac life support; BLS, basic life support; CPR, cardiopulmonary resuscitation; DIC, disseminated intravascular coagulation; MI, myocardial infarction; PTE, pulmonary**

		thromboendarterectomy; ROSC, return of spontaneous circulation.
Australia New zealand	King Edward Memorial Hospital Obstetrics & Gynaecology Directorate (2020)	 **Figure .4 Principles of basic life support The basic life support algorithm (DR S ABCD) should be followed to preserve / restore life by establishing a clear airway, breathing and circulation in a collapsed patien** **Pregnant women:** Ensure that aorto-caval compression is relieved in pregnant patients. This may be achieved by manually displacing the uterus into a left lateral position.

Knowledge deficiencies regarding cardiopulmonary resuscitation for pregnant women have been highlighted and research into developing the knowledge and skills of healthcare professionals in the management of cardiac arrest during pregnancy are limited (Zelop et al, 2018). Einav et al. (2008)reported that specialist clinicians have limited knowledge of the management of cardiac arrest in pregnant women.

To this end, this study was conducted with the aim was to train health science students, case of « future midwives » in leadership and teamwork skills to provide high-quality emergency and resuscitation care for pregnant patients hospitalised in obstetrics units.

MATERIAL AND METHOD

Training in emergency and resuscitation care for pregnant patients hospitalised in obstetrics units is part of the training programme for health science students case of « future midwives » to the ISPITS.The aim of the training is to develop professional skills, enabling students to provide quality emergency and resuscitation care for all pregnant patients with serious health problems related to pregnancy, delivery and post-partum.The practical work consists of several sections: self-learning, theoretical learning, creation of mind maps, simulation training which include simple simulations to learn technical skills, training on high technology equipment and role-playing. One of the objectives is to develop teamwork skills, and to learn to manage a team. The role-playing technique is used to: develop and consolidate the role of the leader, build quickly a team of specialist practitioners ready to work together when a critical situation relating to pregnant patients hospitalised in the obstetrics units arises, develop interactivity in the team, and analyse the work carried out. 19 health science students« futuremidwives »were involved in the study. The clinical situation "Cardiac arrest of a pregnant patient in an obstetrics unit " was used as a training model. The training was conducted in the simulation centre of the ISPITS during the period from 20 February to 20 March 2023. A variety of simulation equipment was used: mannequins for cardiopulmonary resuscitation (RCP), respirator ambu bag, Automated External Defibrillator (AED), etc.

At the end of the course, participants were given an assessment grid to collect their feedback on the effectiveness of thesimulationwith role-playing technique and their satisfaction with the results.

Ethical considerations : Before beginning the study, the students were informed that their participation was voluntary and that the results would be treated as confidential and anonymous.

RESULTS AND DISCUSSION

The training was conducted in several stages according to the "simple to complex" approach:

1. The main task is to learn the algorithm for assisting in the event of sudden cardiac arrest, by executing BLS(Jeejeebhoy et al.,2015). All students should understand the theoretical basis and execute well the

algorithm, that is have good technical skills. The first stage of the training is therefore dedicated to perform appropriate airway management and continuous manual left uterine displacement (LUD).

2. The second stage is the training on assisting team member in the practice of AED. The instructor explains in detail the functioning of the defibrillator and focuses on safety during the evaluation of the rhythm and the defibrillation operation ;
3. The third stageconsists in practising RCP and assisting at AEDon a simulator, including the clinical examination of the "patient" according to the ABCDE principle (Airway, Breathing, Circulation, Disability, Exposure, etc)
4. The last stage of the training is a role-playing in which the roles of the leader and the team members are highlighted. Each member of the team practices the algorithm of RCP. The training uses the following principle: short anamnesis ; examination of "the patient" ; decision making ; action → result, that is, an algorithm of action and clinical reflexion is developed.

The instructor is in constant communication with the student, and if serious errors occur, they are corrected immediately. After each simulation a short debriefing takes place to evaluate the achieved results.
When the instructor is satisfied that the whole team is following the algorithm, the preparation for to the changing of roles between student members of the team begins. The two roles are identical, as a leader without a team will not be able to complete the task assigned to him, and vice versa (Radziszewska-Zielina et al., 2019).
The tasks of the leader are described in (Table 2). The leader must react quickly in case of major force and take a new correct decision. At the end of the session, the leader debriefs the team and thanks them for working together, regardless of the outcome of the resuscitation. It highlights the positive aspects of the team's work and the aspects that need to be improved, in order to increase the final result.

Table 2 : Tasks of the leader

Leader
has a good knowledge of algorithm of BLS
knows the team members by their names
assigns clearly the roles
is able to congratulate and support team members
receives feedback from the team
analyses constantly what is happening
considers the patient in a holistic approach

The role of the team members is integral to the training, as each member performs his or her role well and contributes to a positive outcome for the whole team: saving the "patient". The tasks of the team members are presented in (Table3).

Table 3: Tasks of the team members

Team member
has a good knowledge of algorithms
knows the leader and team members by their names
follow the leader's instructions strictly
receives feedback from the leader
use verbal and non-verbal communication
have good technical skills
interchangeable
accept the leader's feedback in a positive way and correct any errors immediately.

The following tasks of the team members were highlighted:
Role 1:Evaluate of safety, conscience, breathing, "patient's" state using the ABCDE principle,continuous manual LUD, initiation of chest compressions;
Role 2: Alert the resuscitation team, ensure airway access and practice artificial respiration, using an ambu bag;
Role 3:Assistteam member in practicing AED technique.
Before starting the training, the instructor simulates the role of the leader.He comments on the difficult elements of the simulation and stresses the need for the leader to adopt the correct position so that the team can see him clearly. The role of leader is then taught step by step.During RCP, the leader controls the quality of chest compressions (correct position of the patient, correct positioning of the hands, rhythm and profundity of the compressions, good decompression), because this is the key in CPR. The instructor supervises the work of the

leader and the team. Students have to understand that the leader is not a static but a dynamic personnage. which assumes several roles at the same time: establish the algorithm for his work and for the team, evaluate the technical skills of the team members, analyse the work in progress and plan the next step in the algorithm. The leader does not execute any technical tasks, but just looks at the situation and thinks about how a specific "patient" should be treated.The role of the leader is already difficult at the first stage of the process, because it is necessary to supervise the work of two participants at the same time. During the debriefing, the leader often states that he focuses on one member of the team and forgets the other. At the beginning, the quality of the chest compressions and the execution of the appropriate airway management are not checked.

At the debriefing of the first stage, the instructor asks the leader the following questions : Was the evaluation of the state of conscience carried out correctly?; Was the respiratory evaluation carried out correctly? ; Was the CRP algorithm used? ; Was the patient's position adequate?; Were the hands correctly positioned on the chest?; Were chest compressions correctly performed? ; What was the frequency of chest compressions? ; Did you observe a good decompression? ; How many breaths were performed? ; What was the combination between chest compressions and breaths during CRP?.

Thus, the algorithm is recited once again, which contributes to its better memorization. By answering the questions, the leader begins to analyse the simulation and recalls in detail each stage and action of the team. This technique helps to learn more about the algorithm and to develop or consolidate the ability to evaluate one's own results,which has a positive effect on the acquisition of skills. The practitioner must be able to analyse his work, highlighting the positive aspects and critically evaluating the weaknesses and errors in his work that may have a negative impact on the outcome of patient care.

At this stage, the team members do not have particular difficulties, as they execute the technical actions and the instructions of the leader, however the feedback from the leader and the communication between the team members are established.

The next stage of the simulation is the practice of RCP with assistant, that is, a third team member appears. It is important to teach students how to perform the task of assisting in practicing RCP safely. The team should perform RCP with minimal interruptions between compressions, give effective breaths and perform his assistance to the defibrillation. For the leader, the task becomes much more difficult, and it is necessary to supervise each member of the team in the simulation, evaluate the effectiveness of the care, change roles within the team and plan the next stage of his intervention.The leader learns to support team members by praising them for their work. The team learns to communicate with each other, verbally and non-verbally, to attract the attention of the leader to a new problem that has not yet been brought to his attention. Team members should be able to perform all elements of the simulation, changing roles constantly according to the instructions of the leader. Each student is responsible for performing appropriate airway management, continuous manual LUD, chest compressions and assistance to the defibrillation. The final debriefing is another difficult stage of the training. The leader must learn to thank the team for working together, regardless of the final outcome, to ask questions of each team member, to acknowledge good work and to try to understand the reasons for their failure. Each participant in the simulation analyses his or her results first, highlighting the positive aspects of each element of the work done, shows critical thinking about himself and plans to continue his training taking into account the problems he already encounters, participates in the discussion about the leader's work, notes the positive aspects of his work, expresses his opinion about what should be improved in the next simulations. During each simulation, the instructor conducts a continuous assessment of the knowledge and skills and the effectiveness of the training on the skills of each student.

The analysis of the training assessment grids showed the following results:

1- Effectiveness of the simulation with role-playing simulation technique:

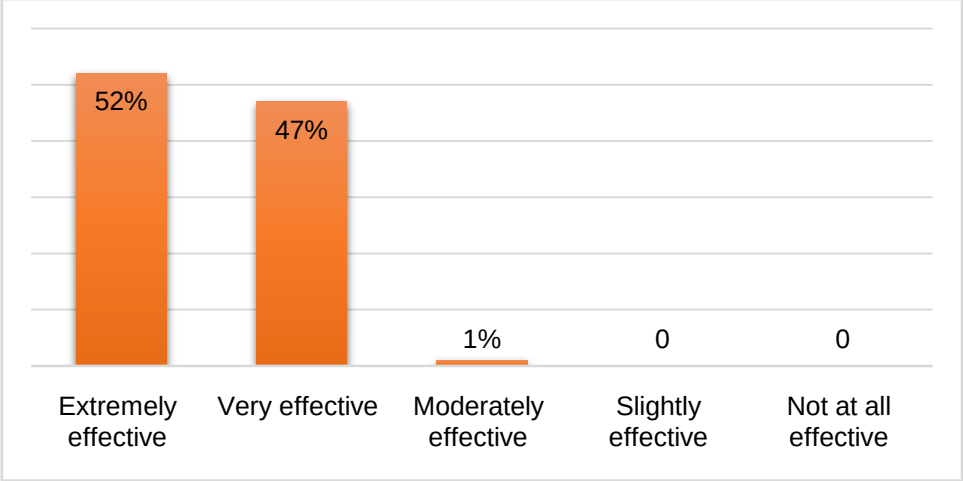


Figure 5: Effectiveness of the role-playing simulation technique for study participants (n=19)

Almost all students indicated the effectiveness of the teaching methodology offered

2- Participants' satisfaction with the results

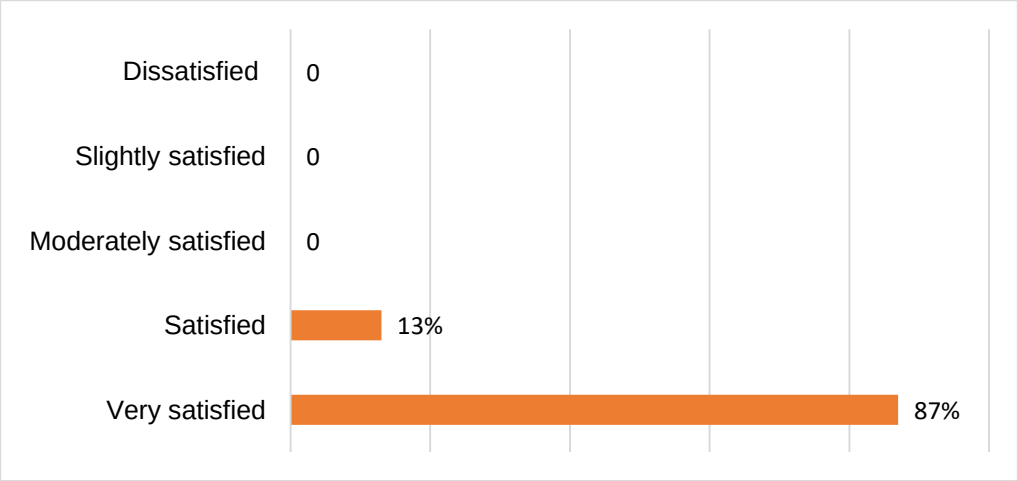


Figure 6: Level of satisfaction study participants (n=19)

All studentswere satisfied with their results.

CONCLUSION

Cardiac arrest during pregnancy is a complex clinical scenario. Resuscitating a pregnant woman involves several specialities and complex decisions and communication between different health professionals and teamwork in emergency and resuscitation care is one of the priorities of the training. According to the results of this study, the simulation using role-playing appear to be powerful training strategies that enable real situations to be partially reproduced, making them more attractive and comprehensible.Therefore, it is an authentic tool of training for healthcare professionals. The simulation using role-playing reinforces respect for care algorithms and learns effective communication within a team. The stage by stage leadership training strengthens students' skills, such as responsibility for themselves and team members, self-control and the ability to manage a team. The aim of the vocational training is therefore to train a team of professionals able to providing qualified care in health emergencies and resuscitation, to play a leader's role, This would considerably improve the quality of care provided. These courses enhance the motivation to learn. They offer a personalised approach to each student.Finally, this study is intended to be the first study ofsimulation with role-playing in emergency and resuscitation care among ISPITS health sciences students« future midwives ». Further research on this topic in other contexts is needed to provide new perspectives to improve the training of healthcare professionals and ensure high-quality care.

RECOMMENDATIONS

The results of this study can be used by teachers in health science training institutions in their professional activities. The conclusions drawn from this work can be useful to teachers and researchers who are engaged in research and development of innovative and effective teaching methods.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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