

Advanced Resuscitation Skills through Simulation Pedagogy

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Abstract

Background: New action-based methods are needed in continuing professional development of emergency staff. The article describes simulation-based education in continuing professional development of emergency care staff, which needs to revise and update their advanced resuscitation skills and practise inter-professional team work to better manage acute and critical incidents.

Methods: The focus is on the factors that need to be considered when planning simulation pedagogy for mature learners. The manuscript is a case report.

Conclusion: Simulation-based education is considered good and effective for experienced participants as they are prepared to go profoundly and holistically into a subject area and to combine action-based learning and reflection. Participants can safely practise critical events, learning from other experienced professionals.

Keywords: Simulation-based education; Pedagogy; Resuscitation; Emergency care; Professionals

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Background

This case report describes the use of simulation-based education in continuing professional development of emergency and acute nursing care staff in one region in Finland. The article focuses on the planning process of a development project, describing factors that need to be considered when planning simulation pedagogy for professionals updating their skills and competencies. Simulation-based education is becoming more popular and accepted since the evidence shows that simulations can substitute for real clinical practice when the conditions are optimal [1]. There is also evidence linking simulation-based education methods to improved patient outcomes [2].

The need to intensify continuing professional development arises from practice; as in many industrialised societies, the population in Finland is ageing rapidly and the number of people with multiple diseases growing. According to many future reviews one factor with a significant impact on the working environment of the future is the increasing acceleration of technological progress and changes in health and social policies [3,4]. Previous studies have shown that there is also need to develop workers' clinical skills at out-of-hospital emergency care [5-7]. All this has led to the need to improve models of care and the overall structure of services [7]. In emergency care in Finland, the focus is currently on developing out-of-hospital care, on preventing near misses and safety incidents and on improving care providers' situational sensitivity. Recent years have also been efforts to include pre-hospital care in simulation training, as proposed by Hallikainen and Väisänen [8].

The continuing professional development of health and social care professionals is regulated by law in Finland. The Health Care Act [9] and the Decree on the continuing education of personnel in healthcare [10] formulate the aim as that of improving and maintaining care providers' professional competence and promoting their coping at work. Achieving these aims will ultimately lead to improved patient safety and satisfaction and higher quality of care. To provide a regional example of continuing professional development: A region with a population of 200 000 is served by a university of applied sciences, whose school of health care and social work is developing new action-based ways to promote evidence-based nursing and to keep pace with

regional development needs in nursing. The current project described in this case report is an example of such efforts.

Simulation-based education

Simulation pedagogy and the learning context have a role to play when educators seek to promote work life competencies in professionals undertaking continuous education programmes [11-13]. According to previous studies simulation pedagogy provides different opportunities for students to develop their competence and confidentiality as they develop their clinical skills [14,15]. The authenticity of a simulation environment and the demonstration of competence are considered as vital parts of simulation experiences [16]. Because the goal is to achieve effective research, development and innovation settings and simulation-based learning contexts, the planning must take consideration to the learners' needs, aims and learning tasks. It is also important to ensure that learning is interactive and supported by optimal physical and virtual facilities. Finally, the teaching staff must have adequate technological competence [17,18].

Simulation is defined as imitation of real-life action with clearly formulated learning outcomes. It is actually not a novelty in nursing education. Students have been learning practical nursing skills in their educational institutions for decades, but the current technology used in learning tools offers more interesting possibilities to learn practical skills. Simulation-based education may include using patient simulators, virtual role plays or interactive videos [19]. The learning environment can consist of digital games or it can involve computer-operated lifelike dolls in a realistic environment [20]. Depending on the desired goal of simulation, the teacher may want to draw on constructivism or behaviorism or a blend of both educational philosophies to best meet the needs of the adult learner [21]. Simulation scenario can be based on written case studies or it can concentrate on practising individual

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skills. It is also possible to create interactive full-scale simulations that allow full immersion. Virtual simulation programmes may be adequate on their own, but often the simulation experience is followed by a debriefing session [22,23]. The computerized system also allows the use of various texts, pictures, graphs and animations [24]. It is possible to offer multiple scenarios and various learning materials to learners. However, it is important to pay attention to the coherence of the material and the avoidance of cognitive overload [25]. The educators in charge of supervising simulation learning are well advised to carefully select materials that can be combined into coherent scenarios [26,27]. The simulation environment usually has a separate control room for monitoring and debriefing [28].

Learners' active contribution is needed in simulation environments [29]. Simulation-based education enables learners to acquire both theoretical knowledge and practical skills in an environment that is as authentic as possible. It is also possible to train dialogical interaction, consultative client service and team work. Simulation scenarios make it possible to apply various scenarios to practise such advanced competencies as management, tactical response operations, reflection, decision-making and ethical problem-solving. It is essential that the crucial issue of patient safety can be approached from the perspective of ethical safety, nursing interventions, functional and safe equipment or from the viewpoint of various care processes. Through emergency nursing scenarios it is possible to practise the prevention of human error using memory prompts like ISBAR and ABCDE. Scenarios can be invaluable when preparing for demanding, rare situations safely, without risking patients [30].

What, then, makes simulation-based learning especially suitable for mature learners promoting their emergency care competencies? It has been presented that technology can open a door to the world and social reality [31] and that it can provide a powerful learning experience in a near-authentic environment [32], make alive the world of theory [4,32] and enable students to safely practise realistic nursing tasks using virtual 3D environments and motivating, effective digital games [5,33]. For professionals, some other attributes mentioned in connection with simulation may be very relevant. First, by definition, simulation represents reality in practical work life [33]; professionals as mature learners find it easier to engage in dialogue with. They may be better prepared than younger students to use the opportunity to go more profoundly and holistically into the subject area [28]. Through simulation it is possible to combine action-based learning and critical enquiry. It can enable meaningful, reflective and creative learning; learners can critically reflect on their action and practice problem-solving and decision-making skills [33,34]. Second, simulation is ideal for practising critical events safely [35] and for training rapid and effective decision-making in situations where part of the required information is missing [36]. Third, inter-professional scenarios can be used to enhance teamwork skills, multi-professional co-operation skills and understanding of other professions [30], a challenge that experienced participants are better prepared to take on. Fourth, when planning continuing education, it is possible to draw on these professionals' experience to incorporate their tacit and evidence-based knowledge into the programmes and to ensure that their learning needs are met [37]. User involvement has been found to increase learner satisfaction with the outcome [38]. The term tacit knowledge is defined the kind of knowledge that is difficult to transfer to another person by means of verbalizing it. Optimal and effective transfer of tacit knowledge requires good personal contact and trust in a confidential and encouraging atmosphere and in as genuine a context as possible [39]. Finally, simulation-based learning provides a few further benefits

for both learners and educators. The educators will get to know the learner quite well. Thus, it's easier to give feedback. According to the author's personal experience of guiding simulation-based scenarios, students are always pleased with this type of learning and feel that it is more effective than traditional lectures. Some students are nervous and worry about failing, which makes it important to warm up the learning situation and emphasize the nature of the session as a learning event.

Case Presentation

A concrete example of simulation learning project is described below. This development project is a collaborative effort of one big hospital and a university of applied sciences.

Aim

The project aim is to plan, develop, implement and evaluate an innovative, practically oriented simulation-based continuing education programme named Advanced Resuscitation Skills through Simulation Pedagogy. The target group consists of nurses, practical nurses and hospital and ambulance attendants, who have worked for years at the central hospital emergency clinic, acute medical department, at the health care centre emergency clinic or in out-of-hospital emergency care or acute nursing. The focus will be on promoting participants' advanced resuscitation skills, including drug administration, airway maintenance, cardiopulmonary resuscitation, defibrillation and to practise teamwork skills. The goal and expected outcome is the participants' increased confidence in their skills in emergency situations. The action-based and co-operative learning approach is also expected to have a positive effect on participants' interaction, communication and management skills.

Planning

The planning group consists of staff from both a central hospital and from a university of applied sciences. The hospital staff involve unit and field managers, whereas the school of health care and social work is represented by its continuing education staff and teacher in charge of simulation-based education. So far the planning group has created a practicable project framework, to be complemented by further details. Special attention is being paid to learner needs, expectations and standards for competence, but it is equally important to ensure that qualified educators and state-of-the-art facilities and equipment are available. It was also decided that before involving the target group participants, a pilot group of eight nursing professionals would test the programme.

Pre-testing

Both the concrete teaching arrangements and the Likert-type questionnaire to be used in the initial and final assessment have already been tested. The pilot study involved 8 professional emergency care providers; 3 paramedics, 4 nurses and 1 practical nurse. The participants found the simulation-based advanced resuscitation training extremely important; it was found to increase both theoretical and practical competence and courage in acute situations. According to the pilot group, the questionnaire was easy and rapid to complete, and for the researcher, entering data into the SPSS was a simple process.

Implementation

In the future implementation stage, four-hour sessions will be organized, always for a group of eight participants. The whole target group consists of 300 professionals, which means that there will be 38 sessions altogether. A lecturer in acute nursing and a central hospital nurse in charge of resuscitation will be supervising and teaching the sessions for a part of the professionals, organized in a simulation room

complemented by a separate control room. There are also 7 registered nurses, who work as paramedics, supervising and teaching the sessions for part of the professionals (n=150). Those registered nurses have got a special education to act as simulation educators.

The simulation learning will be based on scenarios, carried out with a manikin/patient simulator. The simulator will be pre-programmed by the teacher to represent a patient with life-threatening arrhythmia or respiratory failure, or manually adjusted to display various symptoms (cardiac rhythms, breathing sounds, cyanosis) during a resuscitation event. Four participants will carry out the scenario, while the other four monitor the situation from a separate observation room. The observers will concentrate on monitoring the team's compliance with the resuscitation protocol or ABCDE and on their interaction, teamwork and management practices. Ethics, safety climate, confidentiality and trust between participants will be stressed. It's essential that the teacher will remind learners that any failures should be discussed in the learning context only. The scenario should be considered as an interactive learning event. A warm and safe learning environment will allow participants to act freely, without nervousness. The teacher's role will be mainly to facilitate learning by clear instructions beforehand and constructive feedback afterwards. The teacher will guide scenarios and supervise the debriefing sessions, supporting learners during their action, reflection and interpretation of events [34].

Evaluation

Both quantitative (Likert-type) and qualitative research will be conducted to evaluate the effect of the simulation-based inter-professional education on the participants' advanced resuscitation competence. Also the overall the outcomes of this simulation-based inter-professional advanced resuscitation education will be evaluated, including an examination of whether learner needs and expectations have been met. The results will be used to develop the programme further and to assess whether it can be extended to other target groups.

Discussion

It's important to arrange various action based education programmes for professionals. Education programmes designed for professionals already working in clinical nursing are commonly customized to meet their specific needs. These education programmes can also benefit the management of health care organizations, in terms of increased staff competencies. According to previous studies [1,40-42] they will contribute to higher quality of care and improved patient safety. To develop and ensure optimal learning outcomes, it is important to test learning methods and environments, such as simulation. Teachers can also expect feedback for the pros and cons of the programme from experienced professionals with a great deal of tacit knowledge. Simulation-based education offers a genuine context involving co-operative learning, which fosters the transfer of tacit knowledge. Finally, this means that participants from clinical nursing context can become co-developers. The results of this project, to be reported on later, will contribute to the development of continuing education and simulation pedagogy.

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