Simulation Pedagogy for Advanced Resuscitation

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Abstract

Background: New methods are needed in continuing professional development of emergency staff. The article describes simulation-based teaching in continuing professional development of emergency care staff, who wants to revise and update their advanced resuscitation skills and practise inter-professional team work to better manage 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. A case presentation from Finland is provided.

Conclusion: Simulation-based learning is found to suitable for experienced participants as they are prepared to go profoundly and holistically into a subject area and to combine action-based learning, critical enquiry and reflection. Participants can safely practise rare and critical events, learning from other experienced professionals. They can even become co-developers of education, as their experience and tacit knowledge can be incorporated into training programmes.

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

Introduction

This case report deals with the use of simulation-based learning 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 mature learners updating their competencies. Up until now, simulation-based learning has mostly been used with younger students studying for their degrees. The results of this development project will be presented later in another article, whereas this paper focuses on the concept of simulation-based learning and on describing the planning of teaching contents and implementation.

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 diagnoses growing. At the same time, it is becoming more difficult to find enough qualified professionals. New scientific findings and technological advances emerge, health and social policies change. All this has led to the need to improve models of care and the overall structure of services [1]. 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 seen some efforts to include pre-hospital care in simulation training, as proposed by Hallikainen and Vaisanen [2].

The continuing professional development of health and social care professionals is regulated by law in Finland. The Health Care Act [3] and the Decree on the continuing education of personnel in healthcare and social services [4] formulate the aim as that of improving and maintaining care providers' professional competence and promoting their coping at work. Success in achieving these aims will ultimately lead to improved patient safety and higher quality of care. To provide a regional example of continuing professional development: A region with a population of 2,00,000 is served by a university of applied sciences, whose school of health care and social work is seeking new 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.

Aspects of Simulation-based Learning

Both pedagogy and the learning environment have a role to play when educators seek to promote work life competencies in students or in professionals undertaking continuous education programmes [5-7]. If the aim is to achieve effective research, development and innovation settings and simulation-based learning environments, the planning must start with the learners' needs, aims and learning tasks. It is also important to ensure that learning is interactive and supported by appropriate physical and virtual facilities. Finally, the teaching staff must have adequate technological competence [8].

Simulation, here defined as imitation of real-life action with clearly formulated learning outcomes, is actually not a novelty in nursing education. Students have been learning practical nursing skills in their educational institutions for decades. What is new is the current technology used in learning tools. Simulation pedagogy means, for example, using patient simulators, virtual role plays or interactive videos [9]. The learning environment can consist of digital games or it can involve computer-operated lifelike dolls in a realistic environment [8]. Simulation can be based on written case studies or it can concentrate on practising individual skills, using task trainer simulation. It is also possible to create interactive full-scale simulations

that allow full immersion. Sometimes virtual simulation programmes are adequate on their own, but very often the simulation experience is followed by a debriefing session. [10] The computerized system also easily allows the use of various texts, pictures, graphs and animations [11]. It is important that multiple scenarios and various learning materials are offered to learners, although attention must also be paid to the coherence of the material and to the avoidance of cognitive overload [12]. The educators in charge of supervising simulation learning are well advised to carefully select materials that can be combined into coherent scenarios [13]. The simulation environment usually has a separate control room for monitoring [11]. Sometimes an area is also designated for debriefing.

Learners' active contribution is a typical feature of simulation environments [9]. Simulation enables learners to acquire both theoretical knowledge and practical skills and to practise social interaction in an environment that is as authentic as possible. It is possible to train, for example, dialogical interaction, consultative client service and team work. Simulation also makes it possible to apply various scenarios to practise such advanced competencies as management, tactical response operations, reflection, decision-making and ethical problem-solving. To name another example, 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. Learners can, for instance, practise the prevention of human error using memory prompts like ISBAR and ABCDE. Importantly, scenarios can be invaluable when preparing for demanding, rare situations safely, without risking patients [14].

What, then, makes simulation-based learning especially suitable for mature learners updating or promoting their emergency care competencies? It has been said that technology can open a door to the world and social reality [15] and that it can provide a powerful learning experience in a near-authentic environment [16], make alive the world of theory [1,17] and enable students to safely practise realistic nursing tasks using virtual 3D environments [18] and motivating, effective digital games [8]. All this is especially true in case of younger, less experienced students. For learners who are already professionals, some other attributes mentioned in connection with simulation may be more relevant. First, by definition, simulation represents reality in practical work life [19]; mature learners find it easier to relate to and 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 [14]. Simulation makes it possible to combine action-based learning and critical enquiry. Simulation can facilitate meaningful, reflective and creative learning; learners can critically reflect on their action and practise problem-solving and decision-making skills [19,20]. Second, simulation is ideal for practising rare and critical events safely [21] and for training rapid decision-making in situations where part of the required information is missing [22]. Third, inter-professional scenarios can be used to enhance teamwork skills and knowledge and understanding of other professions [16], a challenge that experienced participants are better prepared to take on. Fourth, already when planning continuing education, it is possible to draw on these learners' experience to incorporate their tacit and evidence-based knowledge into the programmes and to ensure that their learning needs are met [23]. User involvement has been found to increase learner satisfaction with the outcome [24]. The term tacit knowledge refers to the kind of knowledge that is difficult to transfer to another person by means of writing it down or verbalizing it. Effective transfer of tacit knowledge

always requires good personal contact and trust in a confidential and encouraging atmosphere and in as genuine a context as possible [25]. Finally, simulation-based learning provides a few further benefits for both learners and educators. The approach allows educators to get to know the learner quite well, making feedback easier. It is possible, for example, to watch successful videoed performance, focusing on the learner's strengths [2]. According to the author's personal experience of teaching simulation-based courses, students are generally 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 emphasize the nature of the session as a learning event.

Methods: Case Presentation

A concrete example of simulation learning is described below. The recently (in spring 2015) launched development project is a collaborative effort of a central hospital and a university of applied sciences.

Aim

The project aim is to plan, implement and evaluate an innovative, practically oriented simulation-based continuing education programme named Inter-professional Advanced Resuscitation. The target group consists of nurses, practical nurses and hospital and ambulance attendants, who have worked for years at the central hospital emergency clinic or in out-of-hospital emergency care or acute nursing. The focus will be on revising and promoting participants' advanced resuscitation skills, including drug administration, and to practise teamwork skills. The expected outcome is the participants' increased confidence in emergency situations. The co-operative learning approach is also expected to have a positive effect on participants' interaction, communication and management skills. Besides individual learners' needs, the planning takes into account the needs of the organization (central hospital).

Planning

The planning group consists of staff from both a central hospital and from a university of applied sciences. The hospital staffs involve the director in charge of emergency nursing care as well as unit and field managers, whereas the school of health care and social work is represented by its continuing education staff. 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 160 professionals, which means that there will be 20 sessions altogether. A lecturer in acute nursing and a central hospital nurse in charge of resuscitation will be supervising and teaching the sessions, organized in a simulation room complemented by a separate control room. The learning will be based on scenarios, carried out with a patient simulator. The simulator will be pre-programmed by the teacher to represent a patient with arrhythmia or respiratory failure, or manually adjusted to display various symptoms (cardiac rhythms, breathing sounds, pupil movements) 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 focus on relevant areas, for example on the team's compliance with the resuscitation protocol or ABCDE and on their interaction, teamwork and management practices. Confidentiality and trust between participants will be stressed. At the beginning of each scenario, the teacher will remind learners that any failures should be discussed in the learning context only. The scenario will not be regarded as a performance to be assessed, but rather as an interactive learning event. This 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 sandwich afterwards. The teacher will supervise the debriefing sessions, supporting learners during their action, reflection and interpretation of events. Only in case of severe errors will the teacher interrupt a scenario to discuss the situation before another attempt is made.

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. A small-scale study may be conducted on the participants' resuscitation skills before and after the intervention. The results will be used to develop the programme further and to assess whether it can be extended to other target groups.

Discussion

Education programmes designed for professionals already working in clinical nursing are commonly customized to meet their specific needs. These programmes can also benefit the management of health care organizations, both economically and in terms of increased staff competencies. Ultimately they will contribute to higher quality of care and improved patient safety. To ensure optimal learning outcomes, it is important to develop and test learning methods and environments, such as simulation. On the other hand, educators can also expect feedback for the pros and cons of the programme from experienced participants with a great deal of tacit knowledge. Simulation-based education offers a genuine context involving co-operative learning and doing, which fosters the transfer of tacit knowledge. Ultimately, this means that participants 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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