

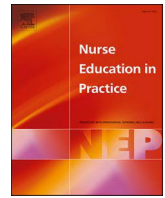
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Student-LED interprofessional sequential simulation improves communication and teamwork

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ABSTRACT

Background: Although simulation is a well-established learning method in Finland, sequential simulations are still uncommon. The objective of this project was to pilot interprofessional, sequential simulation demonstrating acute clinical pathways. The learning objectives were communication and collaboration.

Methods: Two groups consisting of nursing and emergency care students planned the simulation exercises. Other participants in the simulation were medical students, biomedical science students and radiography students.

Results: Participants considered the sequential simulation were a good learning method particularly for skills in communication, patient encounters and working in an interprofessional setting.

Conclusions: An interprofessional, sequential simulation of a clinical pathway is a good method to practice non-technical skills. Sequential simulation also helps students understand the whole health care system.

1. Background/introduction

Simulation is a pedagogical tool that can be used both in student education and professional training. According to Dupuy-Maribas and Prissette (2016), the theoretical basis of simulation is Kolb's model of experiential learning, where learning happens through a cycle of stages. In the model, learning is an experience-based, active and iterative process in which previously learned knowledge is constantly being deepened and refined. Simulation is a common method in health care education because it enables the training of non-technical skills (such as communication, teamwork and decision-making) as well as technical clinical skills without putting patients at risk (Reime 2017).

Sequential simulation is a form of simulation that is less commonly used in Finnish health care education. It demonstrates and simulate clinical pathways by combining environments, actors and scenarios from various fields of expertise (Weldon etc. 2018). Sequential simulation can be used to depict a patient's journey through the health care system, which allows the participants to deepen their understanding of both the system and the patient's point of view (Tribe 2018). Sequential simulation has also been used to design and evaluate new clinical pathways (Weldon etc. 2018).

According to the World Health Organization (WHO 2010),

interprofessional collaboration occurs when multiple health workers from different professions work together to provide high quality care for the patient and their families. Similarly, in interprofessional education, participants from different disciplines collaborate to deliver the best care as possible. Interprofessional education enables the participants to appreciate and understand the skills of different professionals better (INASCL 2016). In addition to improve the quality and safety of patient care, the purpose of interprofessional education is to further understand and respect other professions, strengthen collaboration and knowledge-sharing and develop the participants' problem-solving skills and cost-effectiveness (Pinar 2015).

2. Implementation of the simulation/methods

The sequential simulation was piloted as part of project HARKKA (Training together to tackle tomorrow's health challenges) during two evenings in November 2019. Participants included nursing students (n = 7), emergency care students (n = 6), medical students (n = 2), radiography students (n = 2) and biomedical science students (n = 4).

Nursing and emergency care students prepared the cases in two groups, such that each group planned one case and participated in the other group's case. They were also responsible for moulage and other

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practical preparations.

Emergency care students were responsible for the patients care outside the emergency department and nursing students in the emergency department. Medical students acted as emergency physicians. Radiography students and biomedical science students had prepared appropriate radiographic images and laboratory results for each patient in advance; however, imaging and phlebotomy were performed by the participants as if in an authentic situation. Radiographic imaging was done using a training unit with no radiation emissions and blood samples were analyzed with point-of-care devices.

In the first simulation, the patient had fallen from the 2nd floor of a residential building and his wife had called the emergency number. The simulation consisted of scene assessment, physical examination of the patient, transport preparations, transport to a hospital and treatment at the emergency department. The patient was a standard patient at first but was replaced with a patient simulator in the emergency department as his condition deteriorated and cardiopulmonary resuscitation was indicated. The simulation was carried out in two parts with debriefing sessions before and after admission to the emergency department.

The scenario for the second simulation was as follows: an amateur climber, recently returned from a trip abroad, had experienced cardiac symptoms and dyspnoea while jogging. He fell on a tree branch and injured his leg. He began to have difficulties in breathing and he had to call an ambulance. After examinations the patient was transferred to ER where his breathing became even more difficult. A pulmonary edema and an acute heart failure were diagnosed. The simulation was carried out in a similar way as to the first one; however, only one debriefing session was held at the end.

3. Student feedback/results & discussion

Feedback was collected with a semi-structured questionnaire after each simulation. The questionnaire aimed to determine what the participants had learned particularly about collaborating with different professionals and how they can utilize that in the future.

Results were very similar for both simulations. Thus, it was possible to use an identical thematization strategy for both sets of responses. After thematization, the responses were analyzed. Five main topics were identified (Fig. 1).

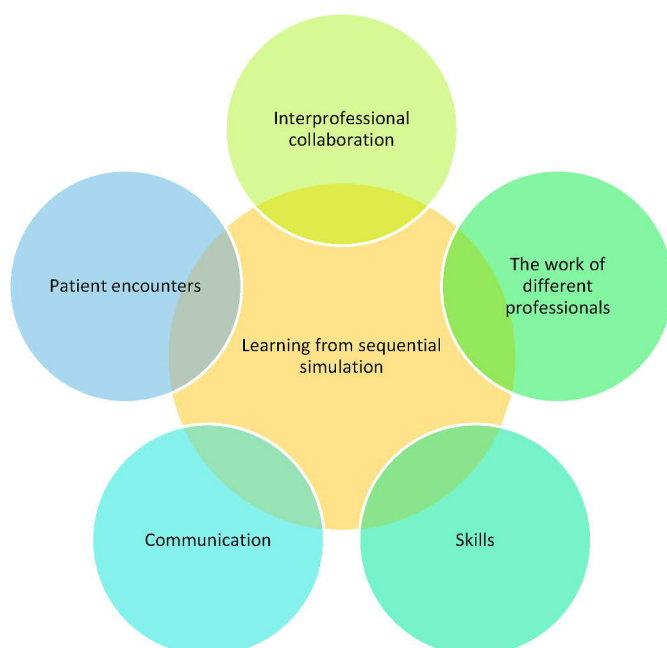


Fig. 1. Identified learning topics of the sequential simulation exercises.

The students appreciated simulation training. They considered sequential simulation to be a useful learning method. For instance, as simulation provides a good opportunity to reflect on one's actions without putting patients at risk, the students reported that the exercises had a positive effect on their self-confidence. Concerning the execution of simulation a single debriefing session was considered more beneficial than two debriefing sessions.

The students felt that *interprofessional collaboration* is important. Previous research suggests that training interprofessionally during studies improves communication and collaboration skills in the working life (Costello 2017). The students felt that working with other professionals benefit them. The simulations helped them to gain broader perspectives of the scenarios. Additionally, the students valued smooth (and occasionally even fun) collaboration highly.

"The interprofessional simulations were excellent. I learned how to make use of the skills offered by the different professionals. (From a nurse's point of view) the discussion by medical students during the case guided diagnostics and our efforts to plan and coordinate care nicely."

The most commented topic in the student feedback was *the work of different professionals*. The students stated that it was particularly important to see different professionals at work. It helped them to understand of the work of different professionals and appreciate it. The students noted that observing students from different disciplines at work also provided some insight into their education and knowledge.

"I improved my knowledge and gained an appreciation of the work of other professionals."

The student mentioned learning about various *skills*. Our data analysis did not differentiate between technical skills and non-technical skills such as communication and teamwork, as they were strongly intertwined in the responses. Skills mentioned by the students included, for example, knowledge of the clinical pathway, diagnostics, communication, simulation planning and teaching.

"I learned how time-consuming it is to plan a simulation exercise, and that there's a lot of different aspects you have to keep in mind."

The students emphasized the importance of *communication*. The students felt that a sequential simulation with participants from different disciplines demonstrates the importance of communication. Simulation training has been shown to improve the transmission and reception of relevant information (Higgins 2016).

"Communication must be clear, especially in an interprofessional setting."

According to the feedback about *patient encounters*, the simulation exercises gave the students new perspectives on encountering, paying attention to and communicating with patients. The simulation also helped the students understand the role of the patient better, which they felt was important for the future. This is also one of the objectives of patient-centered sequential simulation (Weil et al. 2018).

"I learned a lot about paying attention to the patient—and how important it is in all situations!"

4. Conclusion

The results of this study correspond well with previous studies on simulation training. The various types of simulation methods used in health care education offer students a valuable opportunity to develop both technical and non-technical skills in an authentic and safe environment. Although simulation itself is common in health care education, sequential simulation demonstrating clinical pathways are still uncommon in Finland. The patient-centered approach of sequential simulation

helps future professionals gain a better understanding of both the patient's experience and the health care system in its entirety.

In our sequential simulation, students designed and implemented the exercises. This allowed them to examine each participant and teacher's role more thoroughly. Although this student-centered simulation was a success, we feel that in the future students from each discipline represented in the simulation should participate in its planning. This ensures more shared learning goals and a function and an appropriate level of challenge for participants of each profession. In our study, the nursing students had some difficulties setting appropriate learning goals for the other professions when designing the cases because they didn't have enough knowledge about other students' degree programmes.

Smooth collaboration between several different professionals is required for the health care system to function. Practicing in interprofessional groups during studies is essential to improve skills in communication and teamwork, as our study shows.

Declaration of competing interest

We do not have any conflict of interest regarding our work.

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