

The value of simulation-based education in developing preparedness for acute care situations: An interview study of new graduate nurses' perspectives

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ABSTRACT

Aim: This study aimed to explore how new graduated nurses experience a one-day simulation based education, contributing to providing care in acute situations two months after completion.

Background: Simulation-based education is often offered to new graduated nurses as part of important workplace learning. Simulation-based education is a valid learning and teaching strategy and is suggested as a measure to improve nurses' ability in acute situations. However, studies are often conducted as pre-post evaluations immediately after completion of a simulation. Thus, knowledge of the clinical impact of simulation-based education on actual acute care situations could benefit both research and practice.

Design/method: During the winter of 2021–2022, 14 semi-structured interviews were conducted with newly graduated nurses two months after they completed the simulation-based education and the interviews were analyzed using thematic analysis.

Results: The results are presented in three themes: *a structured and shared strategy to handle acute situations, a developed role in acute situations and a more comprehensive understanding of acute situations*. The results revealed that simulation-based education can contribute to the ability to care in acute situations in terms of action readiness and broad contextual understanding.

Conclusion: Simulation-based education can help develop the ability to care for patients in acute situations. However, differences in participant experiences must be acknowledged and processed in order for the implementation and outcome to be successful.

1. Introduction

Nursing care in acute care situations is dynamic due to the instability, unpredictability and uncertainty of the patients, combined with nurses' processes, such as personal, communicative and cognitive, psychosocial and ethical aspects (Huber et al., 2021). Such situations can be especially challenging for new graduate nurses (NGNs) (Sterner et al., 2019). NGNs often report a lack of readiness for the demands placed on them in complex patient situations in acute care hospital settings, such as in terms of assessing, prioritizing and leading nursing care (Willman et al., 2021). Simulation-based education (SBE) is used to reduce the frequently experienced challenge of transitioning from nursing education to professional work (Brown, 2019) and to develop knowledge, confidence and readiness for action in acute care situations (Sterner

et al., 2022).

2. Background

SBE is frequently used to improve quality and safety in healthcare (Seaton et al., 2019) and is designed to create a situation or an environment that allows participants to experience a representation of real events for practice, learning, evaluation and testing or to increase understanding of systems and human actions (Lioce et al., 2020). SBE is a valid learning and teaching strategy that may help participants master clinical and non-clinical skills (Cant and Cooper, 2017). SBE can help improve participants' knowledge, critical thinking and reasoning, self-efficacy, self-confidence, clinical judgment and motivation (Hanshaw and Dickerson, 2020). Moreover, SBE activities can include

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repetition, specific diseases and scenarios and allow trainees to make mistakes in a safe atmosphere without fear of injuring patients (Roberts et al., 2019). Therefore, learning through experience is essential in SBE (Akselbo et al., 2019). A concrete experience and active experimentation in scenarios are associated with SBE and reflective observation and abstract conceptualization are associated with a debriefing session that follows the scenario work as an activity in SBE (Kolb, 2014; Lavoie et al., 2018). The debriefing session is a vital component of SBE, as it can improve learning outcomes, performance, critical thinking, clinical reasoning, clinical judgment and problem-solving (Lee et al., 2020).

A review by (Cantrell et al., 2017) found that SBE is frequently used in acute care settings and specific contexts of acute situations, such as CPR and clinical deteriorating patients. Connell et al. (2016) concluded that SBE improves overall techniques and skills in the recognition and management of deteriorating patients. Similarly, O'Rourke et al. (2021) concluded that SBE improves nurses' early identification and management of clinically deteriorating patients in acute care settings. These findings are important because acute situations are challenging for NGNs (Sterner et al., 2019, 2018).

Most transition programs have incorporated SBE to support the development of skills needed in acute care settings (Aldosari et al., 2021; Kenny et al., 2021). As an activity in the transition programs of NGNs in acute care settings, SBE has well-documented benefits, such as NGNs' self-perception of skills, confidence, competence and readiness for practice (Harper et al., 2021). However, SBE evaluations are often performed immediately after completing the education using a pretest–posttest design (Harper et al., 2021), focusing on outcomes such as clinical judgment (Lawrence et al., 2018) and stress or job satisfaction (Woda et al., 2019). Thus, SBE studies are challenged to conclude that the knowledge and skills developed in SBE have a clinical impact on actual patient care situations (Cantrell and Mariani, 2016), particularly for NGNs in acute care settings (Rutherford-Hemming et al., 2022).

A previous pre-test–post-test study of the one-day SBE that is the object of this study found that the NGNs' perceived ability to provide care in acute situations was significantly improved (Sterner et al., 2022). The present study was conducted two months after completion and aimed to explore how new graduated nurses' experience the one-day simulation-based education, contributing to providing care in acute situations.

3. Methods

3.1. Design

A qualitative exploratory study was designed using semi-structured interviews with NGNs that were conducted two months after completing the SBE. The interviews were analyzed using thematic analysis (Braun and Clarke, 2006).

3.2. Simulation-based education

To enhance learning in SBE, the SBE in this study followed the International Nursing Association for Clinical Simulation and Learning's (INACSL) Standards of Best Practice in Simulation. The standards suggest that the simulation exercise includes the pre-briefing, simulation scenario and debriefing and feedback phases. The first phase sets the stage for the simulation and the second and third are components that are assumed to support learning (INACSL, 2016; Watts et al., 2021).

The SBE of this study is a learning activity included in a mandatory transition program in the southwest of Sweden since the program was implemented in 2015. The program is mandatory for all NGNs with less than four months of work experience. The SBE included four different acute care scenarios: a patient with chest pain, a patient with an altered level of consciousness, a patient with sepsis and a patient with chronic obstructive pulmonary disease who was intoxicated with opioids. These scenarios were developed with the collaboration of representatives from

the transition program and the “simulation and education center” at the hospital. This group included both nurse specialists and physicians.

The SBE started with a general introduction of the day and an activity attempting to provide clear instructions, cooperation and communication while building Lego with their peers. Next, a set of principles in crisis resource management (CRM), such as monitoring the use of the crisis resource management criteria, re-evaluation, closed loops, or speak-up (Rall and Dieckmann, 2005), was introduced. This was followed by introduction of the airway, breathing, circulation, disability and exposure (ABCDE) structure, which is a systematic assessment approach to ensure that life-threatening conditions are identified and treated in a timely manner (Peate and Brent, 2021). Thereafter, the NGNs were divided into groups of two and introduced to a patient case and cards with different actions described to choose and prioritize between them. A facilitator led this exercise by giving instructions orally.

The second part was an orientation to the simulation room, including the equipment, patient simulator and environment. The group was divided into smaller groups with a maximum of eight NGNs. The simulation scenarios were implemented individually and with debriefing sessions in between with observers and a facilitator. The debriefing session did not strictly adhere to a specific methodology but included questions such as; ‘How do you feel now?’, ‘What happened during the scenario?’, ‘What did you learn from this scenario?’. Each scenario started with one primary nurse entering the room. Other members of the assigned simulation group either waited in an adjacent corridor ready to participate in the scenario or were allocated the role of an observer. The observer in an audio- and video-equipped room observed the transmitted scenarios. After the four scenarios were performed and debriefed, the NGNs gathered and evaluated the day, both verbally and in writing. Fig. 1 illustrate the phases of the SBE.

3.3. Participants

After the NGNs had completed their SBE day (winter 2021), all participants (N = 102) were asked to consider participating in the present study. Forty-three NGNs submitted their contact information and gave their consent in writing. Fourteen (eight women, five men and one other) consented to participate in an interview two months later. The participants worked in different medical specialty units, such as medicine, surgery and accident and emergency departments (see Table 1 for participants' demographics).

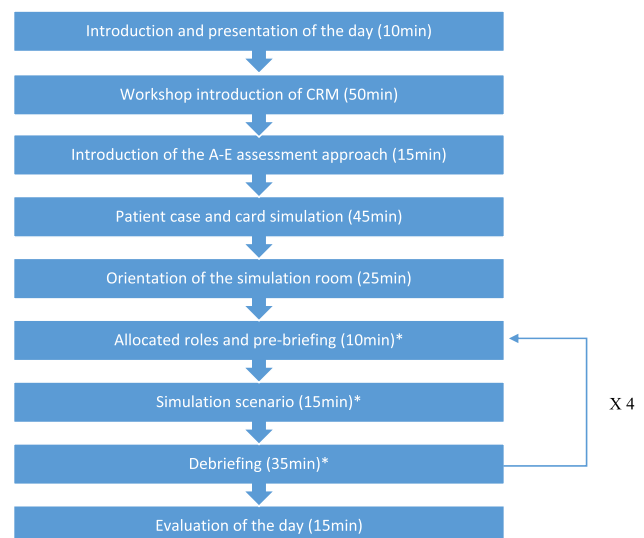


Fig. 1. The phases of the simulation-based education.* Small groups.

Table 1
Participant demographics.

Variable	Value
Participants, N	14
Gender, n (%)	
Female, n (%)	8 (57)
Male, n (%)	5 (36)
Other, n (%)	1 (7)
Median age (range)	29 (23–39)
Mean months working experience, n (range)	16 (9–21)
Experience of acute situations post-SBE, n (%)	
No, n (%)	6 (43)
Yes, n (%)	8 (57)
Acute care/in-patient wards represented, n	13
Nurses in each specialization, n	
Medicine, n	6
Surgery, n	3
Emergency department, n	2
Psychiatric, n	2
Combinations/missing, n	1

3.4. Data collection

Interviews were conducted between December 2021 and February 2022. A semi-structured interview guide with open-ended questions was developed by the research team (all have prior experience in qualitative and NGN research) to address the research question two months after the NGNs completed their SBE. The first question was: “Has the SBE contributed to your ability to handle acute situations in your clinical work?” Follow-up questions were guided by the participants’ answers to this question (for example, “If yes, could you describe a specific situation where you used what you learned?” or “If no, why hasn’t the simulation contributed to your abilities?” and “What concepts of the SBE do you think could be further developed?”) Interviews were conducted individually by all authors via Zoom or telephone, in privacy and were recorded digitally. The interviews lasted 7–28 min (12.5 min on average). The records were transcribed verbatim (totaling 87 pages in A4 size).

3.5. Data analysis

Data were thematically analyzed following Braun and Clarke (2006) steps. Thematic analysis offers an opportunity to seek patterns in qualitative data, without a pre-existing theoretical framework (Braun and Clarke, 2006). For the present study, the analysis was performed inductively and on an explicit level (that is, close to the original data), meaning the analysis progress from descriptions across the data to interpretations of patterns. First, all authors read through the transcripts separately to familiarize ourselves with the data and wrote down their initial impressions of the text. These impressions were discussed in the research group to determine the next steps. Second, text segments related to the aim were marked and transferred to a separate document to gain an overview. These segments were condensed and provided with codes line-by-line by the first and last author (AS and AE). These coded segments were then sorted into preliminary sub-themes, which were subsequently discussed and revised by all the authors. As a result, certain sub-themes changed, and new ones were created. Third, all the authors discussed patterns across the sub-themes that captured salient aspects related to the research question, thus sorting the sub-themes into broader final themes (Table 2). The broader meanings of the themes are further discussed in relation to previous literature in the Discussion.

3.6. Ethical considerations

Ethical approval was waived by the Swedish Ethical Review Authority, DNR: 2019–06329 as this type of study is exempted from ethical approval according to the Swedish Ethical Review Act (SFS, 2003:460).

Table 2
Description of the themes and sub-themes illustrating NGNs’ perspective of SBE’s contribution to their ability to care in acute situations.

Theme	Sub-themes	Examples of codes
A structured and shared strategy to handle acute situations	<i>Embodied structures for action</i>	To apply repetition. Opportunity to practice what you learned in undergraduate education. To follow the structure without getting stuck. To take one step back. Support to act quickly.
	<i>Security and predictability</i>	To use structures in different situations. To “speak up”. To be challenged in their role.
A Developed roles in acute situations	Experience of being a leader	To lead and take care of the patient simultaneously. To seek assistance from others.
	The importance of teamwork	Doing everything alone is not necessary. To call the doctor early. Lack of other professions.
A more comprehensive understanding of acute situations	Interacting with others’ experiences and knowledge	Listening to others’ ideas. Observing others’ actions. Taking care of different experiences and ideas.
	Awareness of own knowledge and needs	Experiencing various types of acute scenarios. Experiencing new situations. Confirming existing knowledge. Comparing oneself with other novices.

However, this study followed the principles stated in the Declaration of Helsinki (World Medical Association, 2013). To ensure this process, the participants received information about the aim and context of the study, but without relation to the researchers before the interviews. Information was given verbally and in writing during the SBE day and written informed consent was obtained from the participants. During the interviews, the participants were again informed of their right to anonymity and that they could withdraw at any time without giving a reason.

4. Results

The results are presented in three themes with six sub-themes. Table 2 below presents the identified themes and sub-themes.

4.1. A structured and shared strategy to handle acute situations

This theme reflects the NGNs’ understanding of the simulation to provide an opportunity to work with predetermined and context-independent structures for providing care and communicating in an acute situation. The categories illustrate two dimensions of working with structures: to embody specific skills and to create predictability in actions and communication.

4.1.1. Embodied structures for action

During the scenarios, the participants were instructed to work according to the ABCDE structure and CRM principles. Although the experiences of using these approaches in acute situations (before and after the simulation) varied, all NGNs were acquainted with this working structure from nursing education. However, irrespective of their experience of acute situations, they valued the opportunity to repeat the ABCDE structure and CRM principles of working in terms of providing a chance to learn and test them in different patient cases:

I have worked for almost a year and things get forgotten. This is like a repetition of acute situations and it stays better in the memory when you repeat it. (NGN 6).

Repeating and practicing this structured way of working, as provided by ABCDE and CRM, in a simulated context was understood as beneficial for situations where time and priorities are critical:

Having just read everything and then knowing that every minute counts, then the thinking starts: "Oh my god, what should I do first?" or "What the hell am I supposed to do now?" But what's good about the simulation is that you have done it. It is in your body. (NGN 11).

The NGNs highlighted that the scenarios created an opportunity to embody the knowledge they had learned from undergraduate education and previous acute situations in clinical work.

4.1.2. Security and predictability

The NGNs perceived that learning to work according to a structured systematic assessment approach creates a sense of security and predictability in stressful and time-critical situations, such as acute care situations. This sense of developed security for performing and prioritizing actions was expressed by both NGNs who had experienced acute situations after the simulation and those who had not. Practicing the ABCDE structure and CRM principles illustrated the value of taking a step back to grasp the situation, where to start the assessment and how to proceed when experiencing an acute situation. For example, certain NGNs described that, before the SBE, they could start to work anywhere in the ABCDE structure or would not proceed according to the structure. The approach of not following the structure of ABCDE assessments depended on their experience of acute situations and problems often faced by their present patients. Caring for the same type of patients sometimes led to NGNs taking shortcuts in their assessment strategy. The NGNs perceived learning to work according to an established structure as creating predictability in what was to be performed and where to focus their attention when providing care in an acute situation:

I have started to think more in the pattern that we learned in the training. I had a patient just this weekend who suddenly had dyspnea and then I immediately started thinking like this, "Okay, is there any blockage?" (NGN 8).

The opportunity to practice different scenarios supported their understanding that ABCDE structure and CRM principles could be used context-independent and was not associated with any specific type of acute situation or diagnosis. This understanding supported their sense of security and predictability in what will be expected from them in an acute situation. The NGNs also described that the ABCDE structure was confirmed to create predictability in their clinical work after the simulation, helping them to accelerate their assessment, clinical reasoning and decision making at their ward:

There have been several occasions since then where I have noticed that the ABCDE has really helped. The assessment goes much faster. (NGN 9).

Another aspect of the sense of security that emerged was the opportunity to practice the CRM principles. For example, the participants described how the SBE clarified the importance of communicating clearly using the CRM criteria, such as speaking up, calling for help and thinking aloud.

4.2. A developed role in acute situations

This theme reflects the NGNs' perception that the SBE provided means for practicing and being challenged in their professional role in an acute situation. To further develop their learning and promote their

practical use of participating in an SBE, the NGNs expressed the need for interprofessional simulation training with their regular ward in its specific care context.

4.2.1. Experience of being a leader

The simulation was described as an opportunity to gain experience from taking a leadership role in an acute situation. The NGNs perceived that executing the team leader role while also focusing on the patient was both stressful and challenging. Therefore, the NGNs emphasized the importance of practice before encountering an authentic acute situation. Particularly, NGNs with limited experience in the leadership role in an acute situation emphasized the experience of being a leader in the SBE as an important learning element for real-life work:

When you're there [as a leader], it felt a bit scary to be responsible, but I still think it was the most useful because that's what I remember the best because I thought it was the most stressful. (NGN 2).

The NGNs emphasized that the simulation visualized the value of having a leader who can discuss measures to be taken, but also of delegating leadership to a more experienced colleague if necessary:

It's okay to bounce ideas with one another to hand over [the responsibility]. There was someone in the group who, quite early on, said, "no, I want someone else to be the leader". (NGN 7).

Furthermore, some of the NGNs stated that the simulation helped them understand that they did not have to manage all patient care responsibilities independently in an acute situation, such as the leading role.

4.2.2. The importance of teamwork

Segments of the SBE focused on teamwork. The NGNs described that the SBE highlighted the importance of seeking assistance from the team when an acute situation arises. Such a situation was described as working toward the same goal and changing roles and responsibilities based on individuals' specific knowledge and experiences relevant to a specific situation. Furthermore, the NGNs emphasized how the simulation demonstrated the importance for the team to discuss subsequent steps in patient care, such as when a physician should be summoned:

... [understand the importance] to call the physician early, because we learned that in the simulation, you usually wait a little too long to call for help. (NGN 5).

In parallel, the participants expressed a desire for continued simulation with their coworkers in their ward-specific context to strengthen the usefulness of the SBE. Although the simulation was perceived as rewarding in terms of practicing and reflecting on one's role, the participation of NGNs only posed certain limitations. The opportunity was requested to practice with assistant nurses as they typically perform care together initially in acute situations; therefore, they also needed to practice how resources can best be distributed in the team on their specific ward:

I missed other professions [...] above all assistant nurses, because they are the ones you work with most in the initial phase of an acute situation [...] and how to allocate our resources in the best way. (NGN 9).

From their ward-work experiences, the NGNs also described the importance of understanding each team member's strengths and weaknesses during and before an acute situation for effective teamwork.

4.3. A more comprehensive understanding of acute situations

This theme reflects the participants' understanding of the simulation

as providing a comprehensive understanding of an acute situation. The participants stated that they gained this comprehensive understanding by recognizing their knowledge and skills and potential gaps and by learning from others' experiences. The theme also reflects the possible challenges to comprehending and learning with and from others.

4.3.1. Interacting with others' experiences and knowledge

The simulation allowed the NGNs to learn from one another considering their experiences of acute situations from their specific wards and clinics in terms of conditions and quantity. The variety in experience was described to facilitate and deepen other NGNs' understanding and preparedness for possible incidents in their ward. The NGNs emphasized the importance of acknowledging these differences by allowing the nurses to contribute their specific knowledge in each scenario:

One [NGN] was from the infectious disease ward, so she knew antibiotics well. I focused a lot on the heart because I work in the cardiologic department. So, yes, there are advantages there that you have learned from real acute situations in your specific departments. (NGN 13).

The NGNs often stated that being active in patient care during the scenarios was the most important factor for developing specific skills and abilities. Nevertheless, the NGNs emphasized opportunities for learning in other roles and activities of the simulation. During the scenario in the simulation room, the NGNs could observe others' actions, thereby expanding their preparedness for similar situations in their work:

It's like this: "Oh, my god, that's good. She puts some pressure on the fluids. I'll remember that for next time. I can do that too." (NGN 5).

After the scenario, the NGNs had an opportunity to learn from each other during the debriefing, irrespective of their role in the scenario work. Observing and then listening to discussions of actions and the motives for performing such actions was understood as contributing to the NGNs' preparedness to realize these actions in their work.

Hence, interacting with different experiences also raised hesitation and frustration toward the simulation as a learning activity. This scenario was especially evident when the NGNs had widely disparate experiences of acute situations or when these experiences were highly ward specific. Rather than a comprehensive understanding, the NGNs may regard suggestions for actions and treatment as unfamiliar, thus causing hesitation and insecurity:

They had a completely different experience of acute care and partly because we work very differently [...], there were several situations where I wanted to do something like I want to call the physician or reduce the oxygen flow, on which they disagreed. That made me feel incompetent. (NGN 10).

As the above quotation indicates, some participants experienced that their clinical work was not recognized in the scenario work and that their suggestions and actions were not followed up on during the debriefing. As a result, some participants questioned whether they had prioritized and performed correctly and adequately during the scenario, which inhibited their learning.

4.3.2. Awareness of own knowledge and needs

Specific scenarios were described as new situations and/or patient conditions, which could be challenging and valuable for developing preparedness for acute situations. For example, situations, diagnoses and patient groups that are unfamiliar relative to their clinical work were particularly challenging. Thus, the simulations provided an opportunity to learn from situations as a complement to what they learn from their everyday work. Particular NGNs described these situations as the most valuable during the day, creating an awareness of how to act in a new situation:

This thing with an unconscious patient was new to me, so that was probably the most instructive situation in how to act. (NGN 7).

Furthermore, the simulation could enable the NGNs to acknowledge that they had adequate knowledge and skills, thereby indicating the simulation's confirming function:

... I had some experience from the work at my ward, which made me feel quite prepared for situations like these and it can also be very important that you get to feel that confirmation. (NGN 7).

The NGNs explained that their potential gaps in knowledge and skills could be identified and made visible when testing their actions and ideas in the scenarios. Observing others acting and listening to one another's suggestions for actions during the simulation was also perceived as an opportunity to contrast their knowledge and skills in specific situations. This contrasting activity could confirm that the participant possesses the specific knowledge and skills needed in the situation and thereby boosts their self-confidence to care in acute situations. Many of the NGNs spontaneously compared their learning experiences from the SBE with their undergraduate simulation activities. Their work experiences could help them focus on learning the caring aspects rather than specific tools and performance:

Everything is new when you're a student. Then, it was difficult with IV lines and everything [technical aspect]. Now, you can look past that to some extent and focus on acute care and that is very good. (NGN 4).

Learning from simulations as an NGN was described as being facilitated by having clinical experiences that they could relate their actions and reflections to, but also a developed confidence in their profession.

5. Discussion

This study aimed to explore NGNs' understanding of how a one-day SBE can contribute to their ability to provide care in acute situations two months after completion. The result was presented in three themes: *a structured and shared strategy to handle acute situations*, *a developed role in acute situations* and *a more comprehensive understanding of acute situations*. The analysis revealed the NGNs' perception that the SBE had various contributions to their abilities to provide care in acute situations. The NGNs understood that an acute care situation could occur at any time, regardless of which type of ward they work at. However, the opportunity to practice situations that do not occur regularly is a relevant complement to what they could learn from everyday work (Billett and Choy, 2013).

In the theme of *a structured and shared strategy to handle acute situations*, the NGNs described that SBE had repeated and built a structure for assessment and principles of how to work, by practicing ABCDE and CRM, which enhanced their workflow. The speed of recognizing a deteriorating patient and timely decision-making in acute situations is crucial to patient outcomes (Foley and Dowling, 2019; Massey et al., 2017). The opportunity to repeat the structures and procedures in different scenarios was appreciated by making the knowledge actionable in terms of expediting their decisions and actions in real-life acute care situations. Benner (2001) described this as an aspect of development toward competence, where the nurses develop skills in selecting the aspects that are more important than others in the clinical situation and start paying attention to them in decision-making. Understanding the importance of collected information is also connected to the clinical decision-making process and is an aspect of situation awareness (Nebelink and Brewer, 2018), which is essential to patient safety in nursing (Walshe et al., 2021). The SBE facilitated the NGNs situation awareness in terms of the embodiment and sense of security of the ABCDE and CRM structures.

Interestingly, the results indicated that the NGNs developed an

understanding of the structure and principles usability, regardless of patients' medical manifestations and context. This finding may be particularly important when dealing with situations that seldom occur in daily work. This finding also highlights the importance of simulating several scenarios with different medical issues to visualize the transferability of the assessment structures.

A *developed role in acute situations* reflected the participants' learning in terms of being challenged in different roles, responsibilities and tasks in such situations. The highly specific aspects of each acute care situation indicated that the participants valued the opportunity to practice different types of scenarios and take on different roles. According to Benner (2001), this result is a step towards expertise in handling acute situations. Benner advocated that, through experiences, nurses gain access to good examples of meaningful aspects of different situations, which can complement rules. In this way, the repertoire of actions and the possibility of adapting such actions in a specific situation are developed (Benner, 2001).

Our results also show that the NGNs perceived the opportunity to experience and develop their leadership as valuable, since this role was described as specifically challenging in clinical work. The need to support NGNs to develop competencies in leading and distributing nursing care has been pointed out previously (Willman et al., 2021). Moreover, the participants described that they recognized the importance of a team in an acute situation, not only in terms of switching roles, if necessary, but also in applying experiences and different professional competencies. This perception could also reflect their request for further interprofessional training or training with their colleagues at the wards. However, their request is not intended to replace the current SBE design solely including NGNs, but rather to be a measure to develop their skills further.

The theme of a *more comprehensive understanding of acute situations* involves several elements: practical actions and skills, the use of conceptual knowledge, interaction with peers during simulation and debriefing and engagement with available resources (such as the patient simulator). During the simulation, the NGNs not only encountered different considerations, such as prioritizing between alternative actions in an acute situation, but also learned from different roles while actively practicing or listening to or observing their peers. The allocated observer role was appreciated and described to facilitate learning. When observing, NGNs could be assigned to observe and provide feedback on a specific CRM-criterion. Tutticci et al. (2022) also concluded that when actively engaged, the observer can enhance learning outcomes in simulation. Variations in roles during the SBE were crucial to the NGNs' perceptions of the practical implications in terms of expanding their understanding of acute situations and own need for further learning.

5.1. Methodologic considerations

Forty-three NGNs were interested in participating in the study and submitted their contact information voluntarily. However, most did not respond to e-mails, phone calls, or text messages, despite numerous attempts by the research group. The reasons for this are unknown, though several research findings have stated that NGNs' first time in practice is stressful and became more challenging during the COVID-19 pandemic. This situation could have influenced their interest in and capacity to engage in the current study. It should be noted that the participants in this study had up to 21 months of work experience despite undergoing an NGN transition program. However, the data remained consistent and variations reported in the results were related to prior experiences of acute care situations rather than professional experience.

6. Conclusion

The SBE supported the NGN's learning and contributed to care in acute situations from different dimensions: developing personal skills in terms of using structures and maintaining safety in their actions and

prioritizations, identifying additional learning needs and understanding their role in a team. The results support the use of different scenarios to illustrate the context-independency of the ABCDE structure and CRM principles. The results also point to the value of the opportunity to both practical training and observing others actions and reasoning to develop a more comprehensive understanding of managing an acute care situation. The findings further demonstrate the importance of designing SBE where differences in experiences are acknowledged and adequately used to expand the understanding of acute care and facilitate NGNs' learning from one another.

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Conflicts of interest

None.

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