



## Integration of clinical simulation into a post-registration neurological course: Insights from the students on the use of a flexible approach to debriefing

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### Keywords

Clinical simulation;  
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post-registration nursing education.

### Abstract

**Background:** This hermeneutic-phenomenological study explored the integration of simulation-based training and flexible debriefing techniques within a post-registration neurological course for registered nurses. It aimed to understand the potential of these teaching strategies to enhance clinical skills and encourage confidence in neurological practice.

**Aim:** The research sought to explore the lived experiences of post-registration neurological nursing students, emphasising their interaction with clinical simulation and flexible debriefing methods to enhance their learning experiences.

**Methods:** Adopting a hermeneutic-phenomenological research design, the study examined the experiences of ten registered nurses, gathering data through semi-structured interviews and focus groups. The resultant data offered a rich understanding of their engagement with the simulation-based course.

**Findings:** The thematic analysis of the data revealed four dominant themes: (1) self-evaluation and critique, (2) group discussion and collective learning, (3) confidence building, and (4) interface of theory and practice. These themes provided a nuanced understanding of the participants' experiences with the course and its pedagogical strategies.

**Conclusion:** The findings accentuated the transformative role of high-fidelity simulation, complemented with flexible debriefing techniques, in enhancing the participants' self-confidence, neurological knowledge, and clinical skills. Despite some challenges relating to reconciling student expectations with the reality of mannequin-based simulation, these insights illuminate the intrinsic value of flexible debriefing as a pivotal tool in supporting other pedagogical strategies, thereby enriching the overall student experience within this post-registration neurological course.

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## Introduction

The evolution of simulation as an educational tool in nursing has gained significant traction, propelled by advancements in technology that facilitate the preparation of students for clinical practice, enhance patient safety, and mitigate risks (Basak et al., 2016). Its educational merits, particularly in the recognition of deteriorating patients and the integration of theory and practice, have been demonstrated in studies which have documented perceived improvements in patient care (Morris et al., 2019).

Simulation-based training can range from low fidelity, involving case studies and/or static mannequins, to high fidelity simulation, which incorporates advanced computer-integrated mannequins that can emulate a wider range of technical and non-technical skills (Basak et al., 2016). Regardless of the level of simulation, the facilitation of learning and the use of debriefing and reflection on the experience are often regarded as the bedrock of learning in clinical simulation (Arnold et al., 2017).

Typically, high-fidelity simulation entails a single simulation scenario followed by a debriefing session (Lopreiato, 2016). However, the unpredictable nature of patient encounters in a real-world setting and the potential for knowledge attrition over time might impede the learners' ability to apply the knowledge acquired during simulation-based training (Sittner et al., 2015). In this context, the use of flexible debriefing techniques can enhance the learning process by allowing for the adjustment of debriefing methods based on the learners' needs and the specific context.

## Neurological simulation: Contextualising local factors

Neurological simulation constitutes an integral part of a ten-week post-registration course introduced in 2020 to augment other teaching pedagogies. This course is primarily attended by registered nurses and is delivered by academics and clinicians with neurological expertise. The key facilitator for the simulation is a critical care practitioner and academic with expertise in simulation.

The simulation session employs a hybrid model incorporating both high and low-fidelity simulation activities. These sessions are held in the clinical skills centre, with an aim to consolidate and challenge learners by linking theoretical knowledge to practise when caring for neurological patients. The high-fidelity simulation focuses on a traumatic brain injury scenario, emphasising the need for a rapid and accurate neurological assessment, treatment implementation, and re-evaluation of a deteriorating patient. The key learning objectives for the high-fidelity simulations include identifying relevant components of a neurological examination, recording an accurate Glasgow Coma Score, conducting an SBAR handover, considering investigations, diagnosis, and potential treatments for the deteriorating neurological patient, and working effectively within a group to share roles and make decisions.

A structured framework is used, which includes a pre-brief, flexible micro-debriefs during the simulation, and a formal debrief at the end of the simulation. The pre-brief aims to orient learners to the simulation experience and create a psychologically safe environment. During the pre-brief, learners are allocated into two groups to discuss the scenario and potential roles before entering the clinical skills room. The first group assesses the stable patient (mannequin) with a traumatic brain injury using the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) assessment framework, documenting their findings before handing over to the second group, who have been observing. The second group is then expected to assess and manage the deteriorating patient, necessitating an ABCDE review, neurological assessment, and the initiation of relevant investigations and treatment. Meanwhile, the first group assumes the role of observers.

A blended approach to debriefing is employed, integrating micro-debriefing and feedback using a flexible debriefing technique, facilitated by the academics. This is followed by a formal debrief at the end of the simulation. This formal debrief incorporates individual reflections, feedback, and shared discussions. According to Verkuyl et al. (2019), the deliberate use of more than one debriefing approach can be more effective and should be tailored to the learners and the simulation context.

The research study discussed in this article involved a cohort of learners who completed both simulations on the final day of a Neurosciences course in March 2022. The complete study is presented in another article (Derbyshire et al., 2023). However, this article will focus solely on the findings of the high-fidelity simulation and the use of a blended approach to debriefing using flexible debriefing techniques.

## The study

### Research purpose, aim and objectives

The purpose of this study is to deeply investigate the integration of simulation-based training and flexible debriefing techniques within a post-registration neurological course for registered nurses. Specifically, it aims to illuminate how these pedagogical strategies impact the learning experiences and clinical skills development of the participating nurses. By exploring the lived experiences of these students, the study intends to unravel the various dimensions of their engagement with these teaching methods. It seeks to understand the role these strategies play in fostering self-evaluation, group learning, and confidence building and how the interface of theory and practice provided by simulation shapes their neurological knowledge and skills. Further, the study aims to discern the challenges presented by mannequin-based simulation and how flexible debriefing can mitigate these to enrich the overall student experience.

The research question guiding this study is: How does the integration of simulation-based training and flexible debriefing techniques impact the learning experiences and clinical skills development of registered nurses in a post-

registration neurological course?

## Aim

The aim of this study is to explore the impact of integrating clinical simulation and flexible debriefing techniques into a post-registration neurological course on the clinical skills development, self-confidence, and learning experience of registered nurses.

## Objectives

1. To understand the lived experiences of post-registration neurological nursing students in terms of interacting with clinical simulation and flexible debriefing methods.
2. To analyse the role of clinical simulation and flexible debriefing methods in promoting self-evaluation, critique, and confidence-building among registered nurses.
3. To evaluate the influence of clinical simulation and flexible debriefing methods on group discussion and collective learning among participants.
4. To explore the impact of the interface of theory and practice provided by the clinical simulation on the participants' learning experience and clinical skills development.
5. To assess the challenges and benefits related to the use of mannequin-based simulation and flexible debriefing techniques in the post-registration neurological course.

## Methodology and methods

This study employed a hermeneutic-phenomenological research design as proposed by van Manen (2014). This design is nested within the interpretive paradigm, which recognises reality as a socially constructed entity (Bogdan & Biklen, 1998).

Semi-structured interviews were selected as the primary data collection method in this research. This method is widely recognised as an effective tool in qualitative research due to its ability to facilitate in-depth exploration of individual experiences (Brinkmann, 2013). Four participants opted for individual interviews, whereas the remaining six preferred to participate in small focus groups of three, following their simulation session.

The interviews and focus groups were conducted by a member of the research team who was not directly involved in the simulation, thus ensuring impartiality. Each interview and focus group lasted between 25 and 40 minutes. The combination of both individual interviews and focus groups added depth and breadth to the data, yielding multiple perspectives on the shared experience of the simulation (Baillie, 2019).

## Participant sample

All participants in this study were registered nurses with diverse neurosciences experience. They held various clinical positions and grades while concurrently being enrolled as university students. After registering for the Neurosciences course in March 2022, these participants were selected and briefed on the study's requirements during an initial meeting. The study included a total of ten participants, which is in alignment with the recommended sample size for phenomenological research (Hennink & Kaiser, 2022).

## Ethical considerations

The study received ethical approval from the Ethics Committee at Northumbria University. Prior to their participation, all participants provided written consent. They were fully informed about the purpose of the study, the procedures involved, as well as potential risks and benefits. The research was conducted adhering strictly to the ethical guidelines for educational research (British Educational Research Association, 2018).

## Data analysis

A qualitative approach, specifically thematic analysis (Braun & Clarke, 2006), was utilised in the data analysis process for this study, guided by the principles of hermeneutics. The hermeneutic phenomenology framework, as proposed by Ajjawi & Higgs (2007), was followed. This includes six steps: immersion, understanding, abstraction, synthesis and theme development, illumination and illustration of the phenomenon, and integration and critique. The systematic nature of this six-step process strengthens the credibility and trustworthiness of the study findings (Braun & Clarke, 2019). This approach is particularly adept at exploring individuals' lived experiences, providing insight into their perspectives and interpretations of a phenomenon (Nowell et al., 2017). Each member of the research team conducted the analysis independently, with the final themes being agreed upon following a group discussion. This approach fostered a rigorous and collaborative analysis of the data.

## Findings

The following four key themes emerged from the narratives: (1) self-evaluation and critique, (2) group discussion and collective learning, (3) confidence building, and (4) interface of theory and practice. These themes will be explained and supported by verbatim quotes with their participant number.

### Theme 1: Self-evaluation and critique

All participants were very self-evaluative during their interviews, both within micro-debriefs and the Rapid Cycle Deliberate Practice (RCDP) (Peng & Schertzer, 2023) during the simulation and the debriefing at the end of the session, where they reflected on their performance and appeared to be very critical of themselves:

I knew I was being too critical of myself as it does makes me nervous, but I actually did much better than I thought during the assessment. (P2)

During simulation, it is expected that you perform. We are being observed by colleagues and the lecturer, and when getting asked questions, I was worried I was going to freeze, but everyone was there to help; I know I am hard on myself. (P6)

However, the more experienced nurses were more confident and recognised the importance of reflection and self-evaluation but could see how simulation made some of the other participants feel:

I was fine, but some people were really critical of themselves, but there was no need – they were all good. I personally took a lot of learning from this, and I was not worried about how I was in the situation; it is all part of the learning. (P1)

## **Theme 2: Group discussion and collective learning**

The findings showed that the blended approach to debriefing was crucial for all participants as they learnt from each other's experiences as a whole group.

It was good to discuss our roles before the simulation as a group and then during and after the event. The briefing with ... was so helpful for learning. (P1)

I realised I did not have a clear role in the simulation, but I was able to see what others did as an observer... But I still learnt from this, and this was discussed during the simulation and in the debrief. (P6)

The debrief at the end of the simulation appeared to provide the best opportunity for group discussion and learning:

The debrief was good for us all to discuss how we did but also breaking up the scenario and discussing what happened to the patient. (P2)

The debriefing session was crucial for all participants as they learned through discussion and debate in small groups. They reflected on their roles, regardless of whether they had a direct role during simulation or as an observer, with both roles seen as equally important.

## **Theme 3: Confidence building**

The findings showed that for most participants, simulation had helped boost their confidence and this was helped by the micro-debriefs during the simulation, where they were questioned by the facilitator and encouraged by their peers:

I personally took a lot of learning from the simulation, and it made me think I knew a lot more than I thought, helped by the group and people I work with in practice who know me well and know

how I work. (P2)

Positive feedback in the simulation from others... and some of my colleagues helped to boost my confidence. (P6)

The tutors in the simulation were good at giving positive feedback to everyone... We all wanted to know more, so our care was better, and this made me feel more confident. (P5)

Some participants did not feel confident initially and felt others from a more critical care background had more confidence:

I know I did nothing wrong, but I think I could have been better, I watched the other group and thought they were really good; they have ITU experience and have one-to-one care, and they just showed a much better knowledge... than me. (P8)

Despite the lack of confidence in some of the participants, it was clear that the blended debriefing approaches helped most of the participants to develop some confidence with a realisation that they had more knowledge and skills than they previously thought. Positive feedback from others, including the facilitators and peers, was seen as important for confidence and subsequent learning.

## **Theme 4: Interface of theory and practice**

Lastly, participants acknowledged that the simulation and debriefing approaches were not just a test of their knowledge but an opportunity to learn and apply the skills taught during the course:

During the discussion, we talked about some of the theories and why we did certain things, which linked back to our classes and how the skills and knowledge could be applied to this scenario. (P3)

The facilitators pulled out the knowledge from us and helped us to link the theory to practise during the session and in the briefs. (P9)

The aim was to enhance their performance through such discussion and subsequent care in the real world of neurological practice: the best opportunity for group discussion and learning:

The debrief was good for us all to discuss the patient, what went wrong... how we could improve our performance in the future. (P2)

It was about the learning we gained from the course and how we could use it in practice, and we all wanted to know more so our care was better for patients. (P6)

There were challenges highlighted by some of the participants in relation to the reality of the mannequins, which made it difficult to link theory to practice, and this

was an issue discussed both during simulation:

The dummies were not very real, especially for neuro patients, so in the simulation, I was looking more at the monitor, and this means you miss out on the real person, not like practice, and we all... discussed that in the debrief. (P2)

[I] feel silly talking to the mannequins...it does not feel real, and this can affect the learning. (P9)

## Discussion

The exploration of student experiences regarding the integration of clinical simulation within a post-registration neurological course, with a specific focus on a blended approach to debriefing, revealed significant findings. The emergent themes of (1) self-evaluation and critique, (2) group discussion and collective learning, (3) confidence building, and (4) interface of theory and practice encapsulate the lived experiences of the participants, who were registered nurses and postgraduate students. These themes echo the tenets of hermeneutic phenomenology and highlight their relevance in the context of clinical education (Smith et al., 2009).

The theme of self-evaluation and critique was prominent among the students. Hermeneutic phenomenology underscores the significance of reflective interpretation in understanding lived experiences, a concept that resonates with the demands of neurological nursing (van Manen, 1990). The tendency towards high self-criticality among novice nurses, as described by Fawaz, & Hamdan-Mansour (2016), was evident in some participants' narratives, suggesting a struggle with self-confidence in simulation-based learning. However, experienced practitioners, like P1, valued self-evaluation as a critical part of their learning process. Such a perspective aligns with Benner's (1984) stages of clinical competence. It indicates that self-reflection and critique play a vital role in progressing from novice to expert, particularly in the specialist field of neurological nursing.

Group discussion and learning, another emergent theme, played a central role in the blended debriefing approach, reinforcing the power of collective learning within clinical simulations (Rudolph et al., 2008). This finding resonates with Gadamer's (1975) assertion of understanding as a dialectical process. The enriched understanding gained from these discussions elucidates the importance of peer interaction and shared learning in the complex field of neurological care. The value placed on both active and observer roles within the simulation echoes Heidegger's (1962) hermeneutic stance, suggesting that varying perspectives can contribute to a deeper and more comprehensive understanding.

Confidence building was a crucial theme, shedding light on the psychological aspects of integrating clinical simulation into post-registration neurological nursing education. The blended debriefing approach, coupled with positive feedback, significantly influenced the participants' confidence levels, supporting Liaw et al.'s (2014) findings regarding the role of simulation in enhancing self-efficacy. Participants' narratives revealed a transition from initial self-doubt to increased

confidence, reflecting Heidegger's (1962) concept of 'being-in-the-world', where individuals interpret and make sense of their experiences. This process is especially vital in the context of neurological nursing, where the complexity of care necessitates high levels of confidence and competence. The theory-practice interface emerged as a significant theme within the neurological course. Participants appreciated that the simulation and debriefing provided an opportunity for learning and applying theoretical knowledge to practice, a viewpoint aligning with Gadamer's (1975) theory of knowledge evolution through reflective practice. However, the challenge of realism in mannequin-based simulation posed some difficulties in effectively linking theory to practice. This finding suggests the need for enhancements in simulation realism or high-fidelity simulations in neurological nursing education, as advocated by Hayden et al. (2014), to bridge the theory-practice gap more effectively.

These findings reinforce the need to support students' reflective skills and self-evaluation, encouraging critical thinking within their learning journey (Mann et al., 2009). The positive impact of group discussion and learning emphasises the importance of a collaborative learning environment, fostering a shared understanding of complex neurological care scenarios, as suggested by Dreifuerst (2015).

The role of confidence-building within the blended debriefing approach has significant implications for nursing educators. Incorporating strategies to enhance students' self-efficacy in clinical simulations, particularly in challenging neurological care situations, is paramount (Bandura, 1994). This process is greatly facilitated by constructive feedback and support from educators and peers.

The connection between theoretical knowledge and clinical practice, as highlighted in this study, signifies the need for a holistic approach to nursing education. This blend of theory and practice is critical in facilitating meaningful learning experiences, thus enabling students to apply their knowledge effectively in real-world clinical situations (Benner et al., 2010).

However, the challenge of simulation realism indicates an area for potential improvement. The use of higher fidelity simulations or the integration of virtual reality could offer more realistic learning experiences and further enhance the theory-practice link.

Hence, the integration of clinical simulation within a post-registration neurological course, utilising a blended approach to debriefing, offers valuable opportunities for learning. The emergent themes of self-evaluation and critique, group discussion and learning, confidence building, and theory-practice interface, viewed through the lens of hermeneutic phenomenology, provide crucial insights into the lived experiences of students. These findings inform nursing education strategies, supporting the development of competent and confident practitioners in the specialist field of neurological care. The challenge of simulation realism, however, suggests an area for future development to further bridge the gap between theory and practice.

## Research study limitations

To ensure the transparency and trustworthiness of the research, it is crucial to acknowledge the study's limitations. One such limitation is the potential for bias, given the primary researcher's experience and knowledge of the phenomenon under investigation (Malterud et al., 2016). Reflexivity was incorporated throughout the study to mitigate this bias. Moreover, social desirability bias could have influenced the participants' responses due to the researcher-participant relationship (Krumpal, 2013). Nevertheless, the participants' critical thinking and sincerity were evidenced by the provision of both positive and negative feedback.

The study's findings cannot be generalised to other contexts as it focused exclusively on registered nurses in neurological practice. However, the transferability of the study's insights to other contexts may illuminate the broader value of simulation in healthcare education. Future research could usefully explore the implementation of simulation in interprofessional education and its subsequent impact on patient outcomes.

Ethical considerations were integral to the study. The research adhered to the ethical guidelines for educational research (British Educational Research Association, 2018), and informed consent was obtained from all participants. Measures were taken to ensure confidentiality and anonymity, with participant names replaced with codes. The data collected was securely stored, and only the research team had access to it. Identifying information was expunged from the transcripts prior to analysis.

Despite these limitations, the study offered valuable insights into the use of simulation in neurological practice, affirming the importance of simulation as a pedagogical approach for registered nurses (Cant & Cooper, 2014).

## Conclusion

In conclusion, this study provides significant insights into the experiences of postgraduate students and registered nurses regarding the integration of clinical simulation into a post-registration neurological course, with a specific focus on a blended approach to debriefing. The emergent themes of self-evaluation, collective learning, confidence building, and the theory-practice interface shed light on the essential components of effective neurological nursing education. The findings highlight the transformative role of simulation in enhancing students' self-confidence, knowledge, and clinical skills in a safe and supportive learning environment.

However, the challenge of simulation realism and the need to bridge the gap between theory and practice are areas that require further attention. Future research and development should explore innovative ways to enhance the authenticity of simulations, such as incorporating realistic patient scenarios and utilising advanced technology. Additionally, ongoing efforts should be made to strengthen the integration of theoretical knowledge with practical application, ensuring that students can effectively transfer their learning to real-world clinical settings.

Based on the findings of this study, several recommendations can be made for nursing practice. First, educators should prioritise the implementation of simulation-based training and flexible debriefing techniques in post-registration neurological courses to enhance the learning experiences of students. The use of simulation provides a safe and controlled environment for students to practise and refine their skills, while flexible debriefing allows for reflective discussions and deeper understanding of their experiences.

Furthermore, collaboration between educational institutions and healthcare settings is crucial to create opportunities for students to engage in authentic clinical experiences alongside simulation-based training. This integration can provide a seamless transition from the educational environment to the clinical practice, ensuring that students are well-prepared and confident in their abilities to deliver high-quality neurological care. By implementing these recommendations, nursing education can harness the full potential of simulation-based training and flexible debriefing techniques, ultimately enhancing the competence and confidence of registered nurses in the field of neurological care.

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