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Original Research | He Rangahau Motuhake

The Impact of a Simulation-Based Learning Activity Using Actor Patients on Final Year Nursing Students' Learning

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Fundamental to clinical nursing is the ability to recognise patient deterioration and know what to do. These skills are vital for patient safety and yet remain a challenge to teach nursing students. Simulation provides a means for students to develop the necessary skills in a safe learning environment. This qualitative descriptive study investigated final-year nursing students' perception of the effectiveness of a ward-based simulation learning activity using actor patients. The research question that underpinned this study is as follows: Does actor patient simulation help preparedness for clinical practice? The simulation setting was a mock medical-surgical ward in a tertiary education clinical skills centre. Focus group interviews were conducted in two parts: immediately after the simulation and then three months later when students had completed their clinical placements. Thematic analysis identified three main themes: decreasing the theory-practice gap; decision-making; and acting like a registered nurse. This study found that simulation with actor patients positively impacted nursing students' learning, reinforcing other studies that support simulation as an effective learning strategy. Although the simulation was challenging, students valued the opportunity to role-play as a registered nurse, which provided insight into the skills and abilities needed for clinical practice.

Te reo Māori translation

Te pānga o tētahi ngohe akoranga ā-whakatakune mā te whakamahi i ngā tūroro kaiwhakaari, ki te akoranga tau whakamutunga o ētahi akonga tau tuatahi

Ngā Ariā Matua

He mea tino hira te kite wawe i te heke o te tūroro, waihoki te mōhio me aha te tapuhi, mō te haumarutanga tūroro, engari e noho ana hei mea uaua ki te whakaako ki ngā akonga tapuhi. Ko te whakatakune tētahi ara pai mō ngā ākonga hei whakawhanake i ngā pūkenga haumaru i roto i tētahi horopaki ako haumaru. I tūhura tēnei rangahau kounga whakaahua i ngā kitenga o ngā ākonga tapuhi tau whakamutunga mō te whāinga hua o tētahi ngohe ako i te wāhanga hōhipera nā te whakamahi i ngā tūroro kaiwhakaari. Ko te pātai rangahau i roto i tēnei mahi ko tēnei: Hei āwhina te whakatakune i te takatū mō te mahi i te taha o te tūroro? Ko te wāhi o te whakaritenga whakatakune ko tētahi wāhanga hōhipera taurima mate-hāparapara i tētahi pūtahi pūkenga tiaki turoro mātauranga matua. I kawea ētahi uiuinga rōpū arotahi i ētahi wā e rua: i muri tonu mai i te whakatakune; ā, e toru marama i muri i te whakatakune i te otinga o ngā whakanohonga tiaki tūroro o ngā ākonga. E toru ngā tāhuhu matua i tautohutia i roto i te tātaritanga tāhuhu: te whakaheke i te āputa ariā-mahi, te whakatau take, me te kawe i te mana o te tapuhi rēhita. I kitea e tēnei rangahau i whai hua te whakatakune me ngā tūroro kaiwhakaari ki te akoranga o ngā tapuhi, me tōna whakatūturu i ētahi atu rangahau e

tautoko nei i te whakatakune hei rautaki ako whai hua. Ahakoa te uaua o te whakatakune, he mea hira ki ngā akonga te kawe i te tūranga o te tapuhi rēhita, i puta ai he māramatanga ki ngā pūkenga me ngā āheinga e hiahiatia ana mō te mahi tiaki tūroro tūturu.
Ngā kupu matua: tūroro kaiwhakaari, akonga tapuhi, hekenga o te tūroro, te whakatakune, te tātari tāhuhu

HIGHLIGHTS

- A simulation-based learning activity using actor patients can deepen student nurses' understanding of the behavioural cues of patient deterioration.
- Simulation-based learning activities can promote student nurses' performance in clinical decision-making.
- Simulation-based learning activities can promote student nurses' preparedness for clinical practice.
- Providing opportunities for student nurses to experience registered nurse practice in simulation promotes confidence.

INTRODUCTION

Recognising patient deterioration and taking the appropriate steps to escalate a clinical response is vital to patient safety (Health Quality & Safety Commission New Zealand, 2017). Such actions require effective and timely decisions to reduce the risk of an adverse outcome (Newman et al., 2023). These interventions require health professionals to have the necessary knowledge and skills to recognise and respond to early signs of deterioration.

Evidence suggests that final-year nursing students lack the experience, confidence (Ortiz, 2016) and decision-making skills required to competently manage the care of a deteriorating patient (Gillan et al., 2022). An Australian study found that during clinical placements, only half of final-year students have any experience caring for a rapidly deteriorating patient, and very few (5%) have performed the role of first responder (Bogossian et al., 2014). Limited experience impacts their preparedness for managing critical events as new graduate nurses. Therefore, nursing students must be educated to develop the knowledge and skills they need to enable them to make safe decisions when there is a rapid change in a patient's condition. The challenge for educators, however, is providing education for students to prepare them to manage these events without compromising patient safety. Planning for students' active engagement with a deteriorating patient in the clinical setting is not possible due to the unpredictability of such events. An alternative to the real clinical setting is the simulated clinical environment, where complex scenarios can be developed to replicate challenging clinical problems.

Simulation-based learning often uses manikins to mimic the patient. The extent to which manikins replicate humans is termed 'fidelity' and is classified as either high, medium or low fidelity (Shin et al., 2015). The more life-like manikins are, the more engaged students become (Aarkrog, 2019). While high-fidelity human simulators operated through sophisticated software and technology can produce physiological responses that replicate physiological decline, they cannot mimic behavioural cues that expert nurses recognise by intuition or pattern recognition as significant indicators of early deterioration (Marshall & Finlayson, 2022). These indicators are often present before a decline is detected in a patient's vital signs. The latter are the traditional parameters used to determine deterioration (Romero-Brufau et al., 2019). Early signs of deterioration that are not detected or not managed can worsen the patient's condition further (Mushta et al., 2018). Therefore, it is crucial for nursing students to not only know and recognise the physiological signs and patterns of deterioration as soon as possible, but also to understand the meaning of behavioural cues that warn of early decline in a patient's condition. Students who have this knowledge will be prepared to make informed decisions about escalating care for the safety of the patient.

Manikins have limitations due to the absence of human features such as body language, non-verbal communication, and emotional expressions. Limited realism can feel unnatural to students making it difficult for them to process information about the patient (Bowen-Withington et al., 2020). An alternative is the use of actors, and in this study, volunteer actor patients were used to role-play the part of a patient. The perceptions of the volunteer actor patients and their contribution to student learning have been previously reported (Marshall & Honey, 2021). This paper presents the nursing students' perception of the effectiveness of a ward-based simulation-based learning activity using actor patients on their learning, decision-making skills and preparation for their transition placements and future role as a new graduate nurse.

BACKGROUND

The transition from nursing student to registered nurse (RN) has long been recognised as one of the most stressful and challenging periods in a nurse's career (Kramer, 1974). New graduate nurses report there is an expectation that they come prepared to manage a full patient load rather than gradually being introduced to their role and responsibilities as they commence professional practice (Ortiz, 2016). This sudden transition induces stress, anxiety and disillusionment, particularly in caring for clinically unstable patients where new graduate nurses fear unintentionally overlooking something that could harm a patient due to a shortfall of experience and awareness of what is happening (Herron, 2018).

Being able to identify the early signs of patient deterioration requires experience, assessment and observational skills (Langkjaer et al., 2021). Additionally, effective decision-making skills are required to promptly escalate care and communicate concerns for the safety of the patient. Decision-making is a crucial element for entry to the registered nurse scope of practice (Nursing Council of New Zealand, 2016), yet is often difficult for new graduate nurses (Benner, 2001).

During their clinical placements nursing students have limited opportunity to actively participate in the decision-making process when a patient's condition deteriorates. Consequently, their lack of experience can delay escalating care which is unsafe for the patient and may result in adverse events (Marshall, 2016). Furthermore, limited exposure to these events can decrease nursing students' confidence in their preparedness for becoming an RN (Usher et al., 2015).

Simulation-based learning in nursing education has been shown to improve new graduate nurses confidence and clinical decision-making (Kiernan, 2018). It provides hands-on experiential learning and opportunities for learners to develop their skills away from real patients and in a supportive learning environment. As simulation can create opportunities for nursing students to gain experience, it is an opportune time for them to learn the skills they need to safely care for an unstable patient while acting in the role of a new graduate nurse. Simulation activities using actor patients may be one way of developing nursing students' decision-making skills and to prepare them for practice.

THEORETICAL FRAMEWORK

Simulation-based learning is underpinned by experiential learning theory (ELT) (Kolb, 1984), where knowledge is gained from life experience in contrast to classroom learning. According to Kolb, learning occurs through a four-stage cyclical process comprising concrete experience, reflective observation, abstract conceptualisation, and active experimentation. The theory was chosen for this study as it recognises students are active participants in their learning as they practice skills they may not have had the opportunity to carry out during clinical placements. Kolb's ELT was applied to this study across the four stages. During the concrete experience stage students actively participated in different simulation scenarios involving actor patients where they applied their knowledge and skills to manage the patient's acute health problems. In the reflective observation stage, the students analysed the experience and discussed their thoughts and actions during a structured debrief where they received feedback from the actor patients, facilitators and their peers. During the abstract conceptualisation stage, students, after reflecting on their experience, considered what they had learned and what they may do differently in future practice. The active experimentation stage is where students applied what they had learned to clinical practice thus completing the cycle.

The current study explored a simulation-based learning activity with actor patients on final-year students' learning. The following research question was used to guide this study: Does actor patient simulation help preparedness for clinical practice?

METHOD

This study aimed to explore final-year students' perception of the impact of a medium fidelity simulation-based activity on their preparedness for clinical practice. The simulation activity involved actor patients presenting challenging clinical problems for the students to manage. The actors were given a scenario and a timeline of how the scenario might progress, and as such might be considered to be standardised patients, although the actors were volunteers and had a degree of freedom in how they interpreted and engaged with their role. To meet the aim of this study, a qualitative descriptive research design as described by Sandelowski (2010) using a focus group method was used. This approach was thought to be an appropriate method as it would provide clear descriptions of the study participants' experiences and perceptions of participating in a simulated clinical environment.

The simulation-based learning activity

The learning activity, which involved actor patients, was conducted in a simulated four-bedded ward in a tertiary education clinical skills centre. Students worked in pairs acting the role of RNs and were involved in one of four possible scenarios which lasted 45 minutes and was followed by a 30-minute debrief. For the scenarios, the actor patients were given information and scenario outlines and asked to role play patients with specific clinical problems that could lead to potential physiological deterioration if the nurse did not initiate appropriate interventions. Before the simulation activity, students were given a 'change of shift' handover from night shift to day shift of all four patients before being allocated a specific patient. The simulation integrated assessment, teamwork, and communication skills which are required competencies for RNs' scope of practice (Nursing Council of New Zealand, 2016) to problem solve and manage clinical issues.

Participants

A convenience sampling method was used to recruit participants. The inclusion criteria were all final year nursing students in the 2018 cohort who participated in the simulation activity (N=98). Ethical approval was gained from the tertiary education ethics committee (Reference Number: 021013). To avoid coercion of the students, the details of the research were explained to them at the end of a class by an independent experienced research assistant. The students were assured their participation was entirely voluntary. They were given oral and written information about the purpose of the study, including that the focus group interviews would be led by the research assistant and digitally recorded. This resulted in 13 students volunteering to participate in the study.

Data collection

Focus group interviews were selected as the data collection method as they encourage participants to interact with each other and express ideas, reflect and reason their views out loud, which may be less likely with one-to-one interviews (Ruane, 2016). Four focus groups comprising four to seven participants each were held, and these lasted up to 60 minutes. Data were collected at two different time points to help understand how learning from a simulated experience impacted on students' practice during their clinical placements. To protect participants identity, they were asked to respect each other's privacy and not to reveal details to others outside of the focus group.

The first interviews were conducted in August 2018, immediately following the simulation and before students commenced their final clinical placement. Eleven students participated in focus groups immediately post-simulation. This interview aimed to capture the nursing students' experience and perceptions of the simulation as a learning activity to deal with challenging clinical problems and prepare them for clinical practice. The second interview occurred three months later, in November 2018, after students had completed their final 10-week pre-registration clinical placement. This interview had the same aim as the first, although students were able to reflect on how they incorporated the knowledge and skills learned during simulation into clinical practice. Participants for the second interview totalled 13 students; 11 who took part in the first interview plus two students who were unable to attend the first focus group. The recordings of the focus group interviews were transcribed by an independent transcriber who was asked to exclude any identifying information to maintain participants' confidentiality.

Data Analysis

Reflexive thematic analysis (Braun & Clarke, 2022) followed the six-step process, as described by Braun and Clarke (2006), to analyse the transcribed focus group data. These steps are as follows: become familiar with the data; generate initial codes; search for themes; review themes; define themes; and write-up. Analysis was performed and then cross-checked and reviewed by both authors. Codes were then categorised into themes using a consensus approach to arrive at the final themes. Three themes were identified, and these are described below.

FINDINGS

Analysis of the data identified three main themes capturing students' perceptions of the impact of a simulation-based activity on their learning, decision-making and preparation for their transition clinical placement: Decreasing the theory-practice gap; decision-making; and acting like a registered nurse (Table 1). Each theme and subtheme is discussed using illustrative quotes.

Theme 1: Decreasing the theory-practice gap

Students identified that the simulation-based learning activity helped them integrate their knowledge and clinical skills learned in the classroom and in clinical practice. Their ability to learn from mistakes and practice in a safe environment were strengths of this learning modality. As one student noted:

> It was a great opportunity for us to put the knowledge and skills that we've learnt from lectures and clinical skills and our clinical placements into practice in an environment that we knew was safe; it was okay to make mistakes.

The subthemes of 'Opportunity to practice' and 'Encouraging revision' add to this theme.

Subtheme: Opportunity for practice

Most participants expressed the idea that learning by simulation provided opportunities for them to practice new experiences such as working without relying on preceptor input. One student related this simulation to practice as a new graduate nurse and commented that:

> I think it's a really good opportunity to learn what it's gonna be like as a new grad [new graduated nurse] when suddenly you don't have that preceptor with you all the time.

Simulation also provided students with opportunities to practice clinical skills they had not carried out previously during clinical placements. Moreover, students gained opportunities to practice appropriate responses in new situations in a meaningful way. They perceived these experiences helped improve practice when a similar situation arose during their clinical placement. This transferability of skills was highlighted by one student who commented that:

> I got the opportunity to do a charting over the phone thing [verbal prescription via phone] and I'd never done that on placement, so when I got to do it on my real placement I was like, I know what to do.

Subtheme: Encouraging revision

Students also noted that the simulation activity encouraged them to reflect on what happened during the scenarios and motivated them to revise their clinical knowledge before starting their clinical placement:

> It was a good reminder that I probably needed to go over [course material] and learn and just to refresh my memory about the clinical knowledge.

One student was motivated to revise course material which helped drive their confidence in dealing with difficult situations, knowing they could ask if they required support with the skills needed for the situation:

> It encouraged me to go back and study and review [course material]. It encouraged me that I did have the knowledge to deal with those situations or that I was

Table 1. Themes and subthemes

Themes	Subthemes
Decreasing the theory-practice gap	Opportunity for practice Encouraging revision
Decision-making	Recognising patient cues Realism
Acting like a registered nurse	Planning and time management challenges Experiencing autonomous practice Feeling overwhelmed Change in confidence

> able to ask people for help if I didn't, if I felt I didn't have the skills for the situation.

Theme 2: Decision-making

Students perceived that the simulation-based learning activity enhanced their decision-making as it allowed them to make decisions independently. Participating in the simulation helped students learn to recognise patient cues and gain an understanding of their meaning which influenced the way they made decisions.

Subtheme: Recognising patient cues

Students learned a valuable source of information that could help their decision-making through not only observing abnormal physical signs and symptoms but also looking at the patient's body language and picking up non-verbal cues, indicating the patient required their attention. As one student stated:

> The way that they [the patient] were, like, hunched over and showing that they were in, like, respiratory distress. Or demonstrating shallow breathing and wheezing for the asthma patient – it was a clear indication that something's wrong.

Other patient cues influencing students' decision-making were the patients' verbal responses. Students learned that abnormal verbal responses can indicate a change in the patient's status and required their prompt action. One student noted:

> It led me to think, okay, this isn't normal, this isn't what I would expect, how they would normally respond. Which then kind of triggered a sense of urgency, like, I need to act quite fast 'cos this person's not well.

Some physiological cues, such as changes in skin colour were not able to be seen in the actor patients due to them not actually being unwell. However, simulated cues from the actor patients that seemed realistic prompted students to gather more information to enable them to respond to the problem. In the context of a patient experiencing hypoglycaemia, one student explained:

> If you can't act it, for example with the hypo [hypoglycaemia} the patient getting paler - the patient grabbed some water and said "look, I'm sweating", and that helped make it more realistic - what they're saying and how they're responding to you, 'cos based off that, you know, there's a lot of assessing around the scenario and how they're responding to you that we need to consider.

Subtheme: Realism

A sense of realism in the simulation was important for students learning new skills, however students still engaged in the activity even when aspects were a little unrealistic if they thought it benefitted their learning. This engagement was evident when one student stated:

> Yeah, and I think despite the little unrealistic things that we all experienced, we all still treated it like it was a really serious situation.

Having actor patients portraying patients contributed a sense of realism to the scenarios which students found helpful for learning and encouraged professional practice:

> I felt it was helpful that they were real people rather than the manikins. With a stranger you have to be professional.

Following their clinical placements students indicated elements of the scenarios provided realism which helped them prepare for their placement. They found the scenarios were real enough to trigger feelings and emotions experienced in real practice. Students perceived that using functional equipment found in wards such as the call bell and having a patient constantly ringing for analgesia replicated the pressure of real life which prepared them for meeting such challenges during their placements. Furthermore, students learned that feeling pressured when administering medications can increase the risk of error. One student described the simulated ward experience:

> They had the call bell, so the call bell system was working, it simulated the feeling that it is on the ward. Well, your patient's complaining of pain and you're trying to go as fast as you can. Maybe it's a controlled drug and needs to be double checked, so it simulates that real feeling of pressure to get things done quickly but also following the correct procedure and that it's a safe dose.

Following their clinical placements students reflected on what they had learned from the simulations and applied to their practice. Realistic scenarios provided a meaningful

learning experience and had a significant impact on their practice and development of clinical skills. As one student explained from a simulation of a person with chest pain: "It was helpful for me going into ED and then working with people with chest pain, and the [clinical skills] used". Furthermore, realistic scenarios also increased students' confidence in their abilities in clinical practice as illustrated by another student who stated:

> I had the asthma one [simulation scenario] and I did have a situation on placement where it was a kind of similar presentation, so it was quite helpful to have been able to practice that.

Yet another student shared that the simulation had prepared them for asking for help from the nursing team:

> The reality of the situation when you're working as a nurse, even after twenty years, you will still get patients with things that you don't know how to deal with, and you need to draw on your other colleagues.

Theme 3: Acting like a registered nurse

During the simulation students valued the opportunity to experience what it might be like to be an RN. Students realised this level of responsibility created new challenges for them which were categorised into four subthemes: planning and time management challenges; experiencing autonomous practice; feeling overwhelmed; and change in confidence.

Subtheme: Planning and time management challenges

Major challenges for students arising from the experience of acting in the role of a new graduate nurse were associated with planning and time management. Students understood that planning care was crucial for ensuring the patient received the care they required according to their needs. However, without their preceptor's guidance some students struggled with the dynamic nature of care planning and the need to be proactive when a patient's changing situation competed with demands on their time to deliver critical tasks such as medication administration. One student illustrated this challenge:

> And trying to wrap your head around the case and trying to comfort your patient while also assessing them and trying to manage their medications. I felt like I couldn't be everywhere at once even though I needed to, but that was because of a lack of planning.

Another student learned that anticipating events when planning care had a beneficial flow-on effect to patient outcomes for a patient with potential deterioration:

> Difficult aspects, for me it would be around the actual planning of the care before doing anything. Just actually recognising that would've been a beneficial thing to do, rather than just going full steam ahead into trying to assess this person and then watch them deteriorate in front of you without any game plan.

Subtheme: Experiencing autonomous practice

The simulation gave students the opportunity to experience being autonomous in clinical practice. They understood that being autonomous meant they were able to make their own clinical decisions independently of RN input. In discussing the experience of autonomous practice, a student commented how simulation can help develop this skill by giving you a "chance to be put into a position that you otherwise wouldn't be put into in your nursing training." Being able to make their own decisions for a physiologically unstable patient, however, was challenging for students. Some students had limited exposure to such an event during their clinical placements and therefore limited experience to build on. They had not appreciated the challenges of making decisions on their own and how rapidly patient deterioration can progress without timely interventions. One student commented:

> It was my first time being autonomous, just being by myself and the rate of how, like just the rate of the deterioration.

In addition, students also appreciated that being active participants in clinical decision-making and commanding their own choices rather than passively following a preceptor's lead created a stronger sense of professional responsibility for their own practice. This active role was highlighted by one student:

> It gave us an opportunity to be more autonomous and take more charge and take more responsibility and lead as an actual RN would. Versus how we've been taught to just kind of work with our preceptors and how to follow with what they're doing.

Subtheme: Feeling overwhelmed

The simulation scenarios evoked real emotional responses for some students such as feeling overwhelmed and pressured. Students recognised that these emotions could make critical thinking difficult. One student explained that a "sense of being overwhelmed and quite stressed, I think, probably clouded our thinking a bit". Yet, another student who experienced the intense feeling of adrenalin managed to make prompt and reasoned decisions about the case:

> It was really overwhelming and really intense. Like you had to think really carefully, like quickly about [the patient's deteriorating status], and I think there's so much adrenalin.

Subtheme: Change in confidence

The simulation activity had an impact on the participants' confidence with their clinical skills and practice, although there were mixed responses. For some students the simulation increased their confidence because they could practice the skills they were less familiar with, as one student explained:

> I feel like it [the simulation] really gave us a lot of confidence. Like, even having done it, not perfectly and not

> how we would want to, but the fact you've been able to practice it.

Another described this further:

> When the situation started happening, I kind of automatically took the steps that I needed to and that gave me a bit of confidence that if a situation did arise then I would know what to do.

In contrast there were students who felt less competent when they reflected on aspects of their practice, where they thought they could have done differently. This reflection appeared to indicate that they felt they had learned from the experience:

> I actually walked out feeling a little bit incompetent afterwards. Afterwards I thought, "why didn't I think about doing this," or "why did I not do that?" So, I think it's finding a balance where you take learning from it, but you walk away still feeling good about yourself.

DISCUSSION

This study explored final year nursing students' perception of the impact of a medium fidelity simulation-based learning activity using actor patients on their preparation for their transition clinical placement. The findings of this study contribute empirically based evidence to the growing body of literature affirming the benefits of actor patient simulation (Webster & Carlson, 2020). The study found the main advantage of using actor patients instead of manikins to simulate real patients, was that actor patients imparted a sense of realism to the simulation which helped make learning more meaningful for the students. This finding is consistent with Martensson et al. (2023) who reported that transfer of learning to the real clinical environment is determined by the realism of the simulated experience. Interacting with actor patients encouraged students in this study to practice their communication skills and engage in therapeutic conversations. This finding aligns with Meerdink and Khan (2021) who concluded that the sense of realism produced by actor patients makes students feel comfortable and creates a psychologically safe space for them to apply their interpersonal communication skills which is beneficial to their learning.

An ongoing challenge for nursing educators and students globally has been decreasing the theory-practice gap (Jacob et al., 2022). This study confirmed that utilising active teaching strategies such as simulation promoted students' abilities to integrate the knowledge, skills, and attitudes they had learned from didactic teaching and during clinical practice. When students recognised under-preparedness in responding to patient deterioration, they took ownership of their learning needs and were motivated to revise areas of their knowledge and practice they identified needed attention. The effectiveness of this simulation-based learning activity was evident when participants shared that new skills learned during the scenarios were meaningful and applied during their clinical placement. These findings are consistent with the literature that reports realistic simulation activities facilitate application of theory to practice (Carson & Harder, 2016; Shin et al., 2015) and have a positive impact on learning outcomes (Hooper et al., 2015).

The workplace expectation is that new graduate nurses are adequately prepared to progress from being supervised to independent professional practice once they qualify (Burton & Ormrod, 2020). This study confirmed that simulation can provide the opportunity for nursing students to experience RN responsibilities by acting in the role of an RN, which is consistent with previous research (Liaw et al., 2014). For students in the current study, simulation enabled them to gain insight into the pressures of RN practice, which at times felt overwhelming. Students reported that non-technical skills such as planning, prioritising, and time management were the biggest challenges for them. We argue that it appears beneficial therefore, that students learn the organisational skills they need to provide safe and effective care when they enter clinical practice as an RN and particularly in managing complex care such as patient deterioration. This readiness requirement points to a need for learning strategies that focus on non-technical skill development to be integrated into undergraduate education; an argument supported by previous research (Jacob et al., 2022; Marshall, 2016).

The results of this study suggest that simulation, where nursing students can use concrete experience (Kolb, 1984), enhances learning and advances decision-making skills in preparation for meeting the challenges of clinical practice. Furthermore, students in this study learned that the patient's body language, appearance, and verbal responses, when different to what was anticipated, could be salient cues indicating that the patient's physiological condition had begun to decline. This interpretive skill relates to Kolb's (1984) processes of reflective observation and abstract conceptualisation. Enhanced learning by the students in this study is consistent with Connell et al.'s (2016) findings. These researchers identified that the use of simulation-based learning was a valuable educational strategy that can be used for improving the skills needed to recognise and manage patient deterioration (Connell et al., 2016).

Limitations of the Study

This study utilised a qualitative descriptive design with subjective focus group data, and there were methodological limitations arising inherently from this approach. Furthermore, the sample size of participants was small, and from one cohort from one educational institution. Although it is not intended to generalise these findings, they may be pertinent for simulation-based learning activities in other nursing programmes. Therefore, it would be useful to repeat this study at other educational institutes. In addition, repeating this study with larger participant groups and assessing students before and after simulation responses would be useful. Further studies using a mixed methods design to triangulate findings may provide a more robust approach for determining the impact of simulation on nursing students' preparedness for clinical practice.

CONCLUSION

The application of Kolb's experiential learning theory provided a useful framework for designing a simulation-based learning activity that had meaning and impacted clinical practice. Experiential learning provided students with the opportunity to gain concrete experience during the simulation. Students reflected on what they learned and how they felt during the experience which facilitated interpretation and understanding. Through active experimentation students applied new knowledge to practice. Simulation provided students with an insight into the skills and abilities needed for clinical practice as a new graduate nurse. Students perceived simulation-based learning encouraged them to link theory and practice, promoted their decision-making, and increased their confidence which helped them feel more prepared for their final clinical placement. The simulation helped students identify areas of knowledge or practice that needed improvement and promoted the use of interpersonal skills, which benefitted nurse-patient relationships. Simulation-based learning with actor patients also enabled salient features of patient deterioration to be observed. This helped students recognise the early signs of deterioration and increased their confidence in escalating care. Furthermore, simulation enabled students to experience the stress and pressure of making timely clinical decisions when a patient is deteriorating. This study provides evidence that simulation with actor patients can be used to create meaningful learning experiences through a broad range of challenging clinical scenarios where students can develop their clinical practice in a safe learning environment.

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