By Heart: A Study of Undergraduate Nursing Students’ Confidence to Perform Cardio Pulmonary Resuscitation when Simulation is used as a Teaching Tool

Tania Beament, Grady Venville

Abstract

Aim/Purpose: The aim of this descriptive study was to investigate the impact of a simulation manikin teaching tool on student nurses’ confidence to perform CPR.

Background: Opportunities for nursing students to gain experience and confidence in CPR performance are limited in the clinical setting.

Methods: Quantitative data were collected through student nurses’ responses to survey items administered before and after the training. Qualitative data were elicited from the participants enabling them the opportunity to reflect upon the use of simulation as a teaching tool.

Results/Findings: The findings indicated statistically significant improvements in the student nurses’ confidence with CPR theory and performance of CPR in both the classroom and clinical setting. The qualitative data revealed comments that were viewed as positive and supported the findings from the quantitative data.

Conclusion: Supporting nursing students with the use of innovative learning strategies such as simulation can increase nurses’ confidence levels.

Background

Nursing education has undergone considerable change since the post-World War II period. Of most significance was the transition from a traditional apprenticeship model to that of a professional degree-based curriculum in the tertiary sector, implemented across Australia in the early 1980s. While this move was initiated to increase the calibre of nurses entering the healthcare system, many issues around the provision and delivery of nurse education have impacted upon the preparation of newly graduated registered nurses within the nursing profession.

In a Government report aimed at identifying current trends and future directions for nursing education, the evidence suggested that “graduate skills and knowledge are below industry expectations” (Victorian Government Department of Human Services, 2006). Additionally, hospital employers expect that new baccalaureate graduates should be able to process complex clinical judgements and decisions, and unfortunately, del Bueno (2005) found that only 35 percent of newly registered nurses met the expectations of clinical judgement. The new nurses had difficulty with applying theoretical knowledge to practical situations; therefore, the impetus for nursing schools is to approach health care training differently and implement innovative learning strategies. Although educators in health professions have been using simulation for nearly 40 years (Abrahamson, 1969), it is only in the last 15 years that nursing education has witnessed the widespread adoption of this technology for teaching and assessment. This development moves away from the traditional approach of using real patients in hospitals as teaching tools. Multiple factors have contributed to this revolution in training including shorter hospital stays and higher numbers of patients with complex medical conditions.

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of patients with higher acuity of illness resulted in reduced patient availability for use in academic teaching centres and universities. In contrast with real patients, simulators are readily available at any time and can provide an environment of clinical conditions and simulations on demand contributing to the translation of nursing theory into practice. Simulators allow for the simulation of knowledge and skills competencies in a risk free, nonjudgmental, controlled environment. Nursing schools are compelled to ensure the competency needed to enter into the nursing workforce and simulation training provides a means to achieve that (Cato & Murray, 2010; Garrett, Macphee, and Lanson, 2014; and Liaw, Chen, Hooi, and Siau, 2014) concluded similar results that an increase in knowledge, competencies and self-confidence were the result of simulation training in undergraduate nursing students.

The simulator has been used as an educational tool over the last five years in nurse education at the university in which this paper was conducted. The simulator allows students to refine and apply their skills in a realistic health care situation and also provides learning experiences tailored to suit their specific educational needs. Simulated patient care scenarios relevant to actual patient conditions and disorders allow the student to learn skills, gain experience and develop competencies in a planned, prescribed manner. Learning via simulation is achieved without fear of harming a real patient and can simulate real time in real life situations.

Exploration of the efficacy of simulated nursing care scenarios is significant as a means to improve the ways in which curricula are delivered and ultimately contextualised by the student nurse. Improving the confidence of undergraduate nurses during their university training has been an essential component of improving their skills in performing nursing tasks whilst in the ‘real world’. With industry demanding more working nurses, this can only be a benefit.

Method

The design for the research study was a descriptive survey used to evaluate the perceived confidence levels of nursing students. The data collection included a total of fifty questionnaires with both quantitative and qualitative items administered before and after the teaching of CPR with the simulation teaching tool. A descriptive research design was selected and ultimately research as the therapeutic technique to be investigated was the practical exercise of performing CPR and descriptive and analytical responses.

Data were collected before and after the teaching of CPR with the simulator. The pre-questionnaire was given to the sample group prior to the commencement of simulation instruction. The post-questionnaire was distributed after the 9th semester allowing the students 8 weeks of simulation interaction. The purpose of using pre and post data collection was to determine the effects of instruction on CPR using a simulation tool. The researcher aimed to establish the participants’ perceived levels of confidence to perform CPR prior to using the simulation manikin. Students’ confidence was evaluated with regard to their theoretical knowledge and with regard to performing CPR in the classroom setting, and in a clinical situation. This was followed by the post simulation section which established the level of confidence the participants reported after completing the CPR task on the simulation manikin in the same way as the pre-data collection with questions related to theory, a classroom situation and a clinical situation.

The study was carried out within a university which accommodates a large nursing school with approximately 1600 undergraduate nursing students enrolled across six semesters of the three year pre-registration program. The sample consisted of a cohort of twelve students from a semester five and semester six cohort of qualifying nursing students completing a three-year Bachelor of Science Nursing programme within the largest nursing school in Western Australia. The students were not performed cardiopulmonary resuscitation in the past, either in clinical placements or in any other form. From the six questionnaires distributed, sixty were returned (100% response rate). From the sixty returned questionnaires, ten were not completed. A total of fifty questionnaires were analysed for the purpose of the research representing an 83% participation rate.

Results

A total of fifty questionnaires were analysed for the study. Forty-one of the fifty participating students were female (82%) and nine were male (18%). In 2006, 1150 (89%) of the student population from the university under examination were female and 147 (11%) were male. Within the participating nursing school, the most representative age group of nursing students across all semesters was the 21-29 year age group. This represented 366 (32%) of the total student population in 2006, and this age group was also the most populated in both 2004 (31%) and 2005 (31%). There were 500 students enrolled across six semesters of the three year pre-registration program on the campus.

The data from the questionnaires indicated that prior to learning CPR with the simulation manikin, 36 (72%) of the 50 participating students felt fairly confident that they had an understanding of the theory associated with performing the task of CPR. Twenty two (44%) indicated they were fairly confident in performing CPR in the classroom setting and fifteen (30%) reported being fairly confident in performing CPR in a clinical setting. One student (2%) responded that he/she felt very confident in performing CPR in a clinical setting.

The first concept to emerge within the qualitative data was the identification of classroom setting practice leading to increased competence and confidence. Twelve (39%) participants identified this in their response. One participant stated, “I think the more experience we have in simulation the more confident we would feel if we were in a real situation” (participant A1). Another participant stated, “Practice makes perfect” (participant B2).

One participant identified that in a classroom setting, receiving feedback and learning from errors leads to an increase in confidence stating: The simulation process means that you can receive feedback, gain practice and ultimately learn from errors made. I believe that this would then reduce my level of anxiety about a situation arising in the workplace (participant B7).

Performing the task in a controlled classroom environment was seen as having the effect of reducing anxiety when performing CPR in the clinical environment. One student responded by stating, “It won’t make it so nerve wracking in the clinical environment if it is practiced all the time at uni” (participant C3).

The third theme to emerge was a strong awareness that participants felt that performing the task in the classroom was perceived as being a lot easier than the perceived ease of performing the task in a clinical setting. One participant stated, “Yes I feel the simulator has been useful in providing confidence in performing CPR although might be unsure on a real person” (participant B1).

The second theme to emerge was the complexity of the concept of confidence, and the many factors that impact on levels of confidence, emotion, fear, anxiety and fear of failing. One participant identified that nothing could prepare her for the emotion she felt when performing the task, she stated, “In some ways yes [simulation did help], but in other ways no I don’t think I was prepared for the emotional side of things. “It was very different to working on a dummy” (participant B20).

The open-ended question on the post questionnaire invited participants to provide their opinion in response to the question, ‘Do you feel using a simulator to practise CPR skills in the classroom has been useful to your confidence in performing CPR as a student nurse in a clinical situation? Please explain your answer’.

Table 1.1 Comparison of Frequencies of Responses on the Pre and Post-questionnaires (n=30)

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<thead>
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<th>Response</th>
<th>Frequency Pre (Class CPR)</th>
<th>Frequency Post (Clinical CPR)</th>
<th>DIFF. +/-(%)</th>
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<tr>
<td>Confident</td>
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Themes emerging from the analysis of this item include classroom practice as compared with performance in a clinical setting, competency and its effect on confidence; and the use of evaluation and feedback and its efficacy as a teaching method.

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The effect this had on the confidence of the student. Students reflecting on their practice to perform the task developed a level of confidence as they were able to self-correct in a non-threatening environment. Participant’s statements included: “The feedback/revision after is great to see what you did well and what you should do next time” (participant C4). Another stated, “Yes, because every time we practice CPR, we get evaluation from the tutor and simulation systems (debrief) so we can expect the outcome in a real situation” (participant B10).

Table 1.1 shows the comparison of the frequencies of responses from the pre and post-questionnaires. For each of the three items the number of respondents who said they were unsure about their confidence decreased and the number of respondents who said that they were very confident increased.

Participants agreed that clinical practise in the classroom was important for improving confidence to perform CPR in the clinical setting. Additionally, participants identified CPR as an integral aspect of CPRpsychomotor performance. Participants articulated that simulation has the ability to actualize complex procedures, permit error-free and realistic learning environment conducive to a positive practical experience in which the student can achieve goals and refine skills.

Participants described the simulator as advantageous in practising the task of CPR. Participants also described situations in which they observed their
peers and tutor displaying levels of confidence when teaching the skill. Participants described scenarios in the classroom where the tutor was available to teach the skill effectively with patience and understanding, providing feedback and evaluation when performing the skill. Others stated that ‘practice makes perfect’.

**Discussion**

The participants within the study characterised their level of confidence broadly and included other competency-based comments relating to their perceived level of confidence. This suggests that confidence itself is not concrete, but is a unique phenomenon defined by the context in which it exists. According to the Self-Perception Theory (Bem, 1972), we reach conclusions about who we are after observing our own behaviour and/or within the environments in which the behaviour occurs. Reflection and introspection about the behaviour decides one’s own attitude and feeling. Perceived confidence originates from the observation of confidence within themselves and the situation.

Within the environment of a simulation lab which is free from risk and a controlled situation, the students reported feeling secure which led to increased confidence levels. Debriefing sessions and reflection about the performance and self-corrections during the simulation were both important for building skill and confidence. Participants claimed that the feedback and subsequent attempts with corrections were invaluable to the learning experience.

It is important to note that participants reported varying degrees of confidence to perform the task of CPR. Students reported that being able to assimilate theoretical knowledge into practice was a central function of clinical experience. Participants also reported that gaining confidence with clinical skills was a positive aspect of their clinical practice. In reporting negative aspects, the data revealed that participants had unclear expectations of their confidence to perform CPR in a real clinical situation. Overall, the participants reported simulation as a positive aspect to their learning of clinical skills in particular the task of performing CPR.

**Conclusion**

Nursing shortages are a global concern fuelled by factors which include an aging existing workforce, recruitment and retention difficulties, and attrition from pre-registration programmes. It is an undisputed fact that there will always be a need for nurses and thus a need for quality nursing education. The question of how we as educators can prepare our students to practise safely and efficiently for their role in the current climate is paramount.

The technologies available to nurse educators are becoming increasingly sophisticated, and this phenomenon is coupled with decreased availability of clinical sites for nursing training. Nurse educators need to evaluate the available technologies to understand how best to prepare our future nurses for practise. Issenberg and Scalse (2008) concur that, in the future, the use of simulation will ensure better training of health care providers in the basic clinical skills and provide on-demand opportunities to practise and maintain them. Importantly, as good as the simulation experience can be, it cannot entirely replace some of the traditional teaching methods. Students will still need to learn at the bedside with real patients.

**References**


