Midwifery educators' experiences and perceptions following a high-fidelity birth simulator workshop

Abstract

Background: Uninformed adoption of simulation technology such as high-fidelity simulators may result in ineffective learning and teaching. However, in the literature little is known about specific developmental approaches to prepare midwifery educators for using this pedagogy.

Aims: The overall aim of this research was to describe the experiences of midwifery educators following a 2-day high-fidelity workshop and the impact on their perceived preparedness to teach using a high-fidelity simulator.

Methods: Qualitative data were gathered from one semi-structured focus group 2 weeks following the workshop. Thematic analysis identified emergent themes pertaining to the research objectives.

Findings: Four main themes emerged from the data: fears regarding complex technology, time for scenario-building, opportunity for team-building, and enhancement of the curriculum.

Conclusions: Initial face-to-face high-fidelity workshops are recommended to achieve successful integration of high-fidelity simulators into midwifery education, with supportive materials to promote continued accessibility and learning. Support from technical staff is essential.

Keywords: Midwifery, Education, Education technology, Simulation

Midwifery is a practice-based profession requiring new graduates to be equipped with the necessary practical skills to enter the profession, yet it is often not possible to provide the full range of skill-learning in the practice areas. It is known that skill-learning through simulation in midwifery is beneficial and an essential component of pre-registration curricula, as well as enhancing post-registration continuing professional development courses and individual study days (Haigh, 2007; Nursing and Midwifery Council, 2009; McCaughey and Traynor, 2010; Cooper et al, 2012).

High-fidelity simulation is increasing in popularity. Bland et al (2014) define fidelity in midwifery education as aiming to replicate a realistic clinical experience. Teaching with high-fidelity simulators has proven useful in improving clinical judgement and for teaching and evaluating some clinical skills (Harder et al, 2013), providing innovative approaches to traditional educational methods (McNeill et al, 2012).

One of the recognised challenges of introducing this pedagogy is a lack of educators with the knowledge and skills to use the strategy appropriately. Often, educators are not prepared and adopt a trial-and-error approach to their teaching, or avoid using it altogether (Jeffries, 2008). Curtis et al (2012) showed that uninformed adoption of simulation technology results in ineffective training programmes. It is important, therefore, to train educators in the use of the technology, to promote quality in clinical skills education (Shrivastava et al, 2011).

However, little is known about specific developmental approaches to prepare educators for this approach to pedagogy and there is no consensus among educators on how these skills can be developed (McNeill et al, 2012). This highlights the need for additional research into how educators can be prepared to competently make use of high-fidelity simulation technologies in their teaching.

Aims and objectives

The overall aim of this research was to describe the experiences of midwifery educators following a 2-day high-fidelity workshop and the impact on their perceived preparedness to teach using a high-fidelity simulator.

Specifically, the objectives of the research were:

- To explore the experiences of midwifery educators taking part in a high-fidelity birth simulator workshop
- To determine whether developmental workshops are appropriate for midwifery educators to develop teaching skills using a high-fidelity birth simulator
- To explore how midwifery educators perceive their knowledge and understanding of the high-

Fiona Wark, midwifery lecturer, Robert Gordon University, Aberdeen
f.wark@rgu.ac.uk

fidelity birth simulator will affect the student learning experience.

The objectives were not to be seen as independent of each other but interconnected issues surrounding high-fidelity simulation preparation in midwifery education.

This research contributes to the development of high-fidelity simulation by determining the impact of a workshop on lecturer preparedness, and the appropriateness of workshops as an educational approach. The findings will inform how future developmental programmes for preparing education could be designed.

Methodology and methods

As this research is about lived experience in education, a phenomenological approach was used (Cousin, 2009; Creswell, 2013). Van Manen (1990) describes hermeneutic phenomenology as a methodology that seeks description and interpretation of lived experiences. Through an interpretive process the researcher aims to understand the meaning of lived experiences gathered from research participants.

In hermeneutic phenomenology, the researcher is seen as integral to the research process, therefore pre-understandings need to be explicit in order for the findings to be trustworthy. The researcher is a midwifery educator and attendee at the workshop. She has her own experiences and beliefs that influence the data analysis, yet this is not detrimental to the research. On the contrary, within hermeneutic research, additional insights and an understanding of the broader context of the phenomenon are positive attributes adding depth to the analysis and subsequent findings (Cousin, 2009; Creswell, 2013).

Data collection

The research was approved by the School of Nursing and Midwifery Ethics Review Panel at Robert Gordon University (15-04).

Potential participants were given a letter of introduction and a consent form to confirm their participation in the project. They were informed of their right to decline or withdraw from the study at any time and were advised that data would be digitally recorded and stored securely.

A semi-structured focus group interview was conducted 2 weeks after the workshop with the midwifery education team from the School of Nursing and Midwifery. Group dynamics and discussion between participants generated data collectively, rather than between participant and moderator. As the researcher is a member of the midwifery team and also attended the workshop, the focus group was facilitated by an experienced third-party moderator to promote objectivity and reduce the chance of influencing personal knowledge and experience.

Data analysis

Qualitative data were digitally recorded and transcribed verbatim by the researcher. After transcription of the focus group, staff names were replaced by codes, and quotations were used with care to avoid individuals being identified through contextual details in order to maintain

Table 1. Initial themes and subthemes from stage 2 framework analysis

Key themes	Subthemes
Complex technology	Opportunity to get to know and be hands-on
	Impressed with versatility—positions and scenarios
	Pre-developed scenarios expensive
	Developing own scenarios time-consuming
Scenario-building	Useful to learn how to build and run scenarios and plan how to incorporate into curriculum
	Plan to set ability to level of course
	Still some apprehension about this
Team-building	Opportunity to work together
	Support from one another
	Useful to work with technicians
	Two days too much commitment—not everyone could be there for both days
Enhancing the curriculum	Aware of substantial evidence to support pedagogy
	Can be opened-up across faculty
	Should be used to support other learning and teaching resources, not as replacement

confidentiality. A framework developed by Ritchie and Spencer (1994) provided a straightforward and transparent method of analysis and a clear track of how themes were derived from the data (*Table 1*).

There were some drawbacks to using the focus group for data collection. There may have been too few numbers yielding less quality data, and the timing of the focus group was negotiated in order to reduce that risk. In addition, there could have been dominant relations within the group leading to reduced input from some participants (Cohen et al, 2011); this was minimised by selecting a skilled and experienced focus group moderator and developing questions and prompts to keep the group discussion open-ended but to the point.

Findings

Following analysis of the data, four main themes emerged: complex technology, scenario-building, team-building and curriculum enhancement.

Complex technology

The discussion illustrated an anxiety about using the equipment due to its perceived complexity:

> ***'The thing about the "machine" itself is it's so complicated that you would have never been able to work it out yourself.' (Educator 4)***

It was clear from the group that the educators enjoyed the opportunity to get to know the equipment and be hands-on in the workshop. Participants stated that they were impressed with the versatility of the simulator; the positions the mannequin could adopt and the scenarios that could be developed, including a variety of obstetric emergencies.

> ***'I didn't think it would be as good if I'm honest... seeing the simulator in action exceeded my expectation. I didn't think it would be as versatile as it was.' (Educator 1)***

> ***'One thing that I was very impressed [with] when I first joined the group was [that] all my colleagues were wearing gloves and I thought it was very hands-on rather than watch someone ramble on...' (Educator 5)***

Feelings of anxiety and insecurity in their abilities were evident among participants, owing to a lack of understanding and knowledge of the simulator before the workshop. There was recognition of the complexity of the equipment and its associated cost, and being in the workshop relieved participants' fear of breaking it.

> ***'You know these things are pretty high-tech and costs a lot of money, you would hate to damage it in any way, but it's a pretty robust piece of equipment.' (Educator 1)***

Offering a demonstration and allowing the team to try it themselves were positive aspects.

Scenario-building

The structure of the workshop was positively received and participants commented on learning not just the working of the simulator but also the development of scenarios.

> ***'I think the structure of the workshop was planned well... helped us plan the scenarios and it was an open dialogue with the team members so that we have opportunity to differentiate for different year groups... The workshop was really useful to have that time to plan.' (Educator 5)***

However, there remained some apprehension about programming the scenarios.

> ***'I don't think I would feel confident with programming scenarios.' (Educator 6)***

> ***'I think it would be useful for us to do some scenario practice.' (Educator 2)***

> ***'I think we should be supporting students as well to develop scenarios. Certainly it was a big learning curve to learn within that two-day workshop.' (Educator 2)***

Support from the clinical skills technician was again highlighted as being key to the successful running of a scenario, both to help with set-up and to offer support during a session in case of technical problems.

There were some suggestions to improve confidence and facilitate further support for staff. This included having the company representative return to assess competence after a set period of time, refresher film clips with overview of the function, and running scenarios and sharing ideas with peers who have used it successfully to learn how they overcame challenges. All participants agreed that these resources could not replace the initial workshop, but would complement it. This again highlights the importance of dedicated

learning time, not solely the provision of learning resources and equipment.

Team-building

The workshop was collectively agreed as a positive opportunity to work together and provide support. However, there was recognition of the difficulty for the whole team to attend the 2 days of the workshop:

> ***'When I signed up for the training I thought that's great—two days, but as it got closer there were conflicting commitments.' (Educator 5)***

There was debate as to whether the workshop should have been shorter or delivered in a few 'short burst' sessions to encourage attendance. However, some participants found the 2 days useful, to learn how to use the simulator on the first day and develop scenarios the next day.

The importance of working with lab technicians was highlighted as an important factor in the success of a simulation. It was recognised that developing scenarios could be done within the team, but having a technician to set up and assist in the mechanics of the simulator is crucial.

There was some discussion about nominating a simulation 'champion' who would use the simulator regularly to maintain skills and support others. However, in contrast, the participants concluded that having one champion may make the role vulnerable if that person is not available, so there should be a few team members with expertise to strengthen high-fidelity teaching. Again, this highlighted anxiety felt by educators when faced with the unknown, and that a perceived lack of skills may lead to rejection of the innovation.

Enhancing the curriculum

Overall, the group agreed that this was a positive enhancement to the curriculum and there was awareness of the evidence to support high-fidelity education.

> ***'I think the evidence is there to say simulation affects how you respond in practice, so I think to have a high-quality simulator will hopefully improve their performance in practice and, more importantly, confidence.' (Educator 1)***

> ***'It has great potential.' (Educator 3)***

It was recognised that with increasing student numbers locally, educators need to be aware of creative and innovative methods of teaching to ensure an equal and consistent learning experience for students.

> ***'Although it's good as they progress in their programme it has to complement other teaching strategies. Also we have such big classes now so for every student to have contact with the simulator is probably not going to be realistic for all skills sessions. We are going to have to be using other models for other things.' (Educator 3)***

It was agreed that the high-fidelity simulator takes time to incorporate into the curriculum and should be used to complement existing pedagogical approaches, not as an individual separate approach. There was also positive discussion about how the simulator can be used in partnership across the faculty to develop communication and team-working within inter-professional education.

Between participating in the workshop and the focus group, one participant had already incorporated the simulator into a teaching session and had received positive feedback from the students, which the participant said had been reassuring. This may suggest that student experience could be influenced by factors such as staff members' confidence in their skills to run the scenario and their ability to engage all students with increasing class sizes.

Discussion

The Diffusion of Innovations model was presented by Rogers (2003) and describes diffusion as the way that innovations are disseminated throughout a social system over time. Rogers (2003) identified the uncertainty created by new innovations that require individuals to acquire new knowledge. He described the innovation–decision process as the process in which individuals gain initial knowledge of an innovation, from forming an attitude about whether to adopt or reject to implementation of the change and confirmation of the decision.

Rogers (2003) also recognised that this journey is not instantaneous, and the innovation–decision process may occur over time with ongoing support and development.

He suggests a five-step theoretical framework, which has informed this research:

- Knowledge is gained when an individual learns of an innovation's existence and seeks to understand how it functions
- Persuasion is when the individual forms a

favourable or unfavourable attitude toward the innovation
- A decision is made when an individual participates in activities that lead to a choice about whether or not to use the innovation
- Implementation occurs when the innovation is put into use
- Confirmation happens when an individual seeks reinforcement of an innovation decision. They may reverse this decision due to negative experiences or conflicting messages.

Knowledge

Knowledge of the high-fidelity simulator was the first step in the innovation–decision process. Educators clearly stated that there was uncertainty about the effectiveness of the simulator before the workshop and some had felt anxious about facilitating high-fidelity simulation due to the perceived complexity. Of course, this is not uncommon when learning new skills; as Rogers (2003) highlighted, it takes time and commitment to learn new skills. At the 'knowledge' stage, the individual wants to know what the innovation is and why it works. The workshop provided an opportunity to be hands-on with the technology, alleviating some of the anxiety. An effective lesson plan allowed time for scenario-building to demonstrate how the simulator can be applied appropriately to achieve learning outcomes.

Although the experiences of the workshop were positive, it is important to acknowledge the challenges reported by educators, which were mainly related to time constraints. Taibi and Kardong-Edgren (2014) report that many educators feel pressured to learn and adopt simulation pedagogy with limited time and resources while continuing to provide the current syllabus.

Persuasion and decision

The importance of working together was highlighted in the focus group discussion. Rogers (2003) stated that at the 'persuasion' and 'decision' stages, an individual seeks innovation evaluation information to reduce uncertainty about adopting an innovation. Interpersonal networks with peers are likely to provide evaluative information. The workshop was deemed an appropriate approach to learn with peer support, and it was identified that support from lab technicians was vital. This is reflected in the literature (Burke, 2009; Harder et al, 2013).

It has been recommended that the relationship between educators and technical support should be more formalised and include additional learning interactions beyond the simulation activity itself (Harder et al, 2013); this recommendation has been validated in this study. The workshop provided an opportunity for educators and the clinical skills staff to work together, and participants felt that the workshop—despite the challenge of identifying an appropriate date and time that suits all parties—was an appropriate approach to develop skills for using the simulator. The educators highlighted that additional developmental resources, such as online video clips and literature, would be useful; however, this should not replace the initial workshop. Harder et al (2013) found that while the initial orientation is crucial, ongoing support as instructors learn the pedagogy will assist them to facilitate high-fidelity simulation in way that promotes a positive student experience. Bogossian et al (2012) acknowledged that many educators think a faculty champion who is dedicated to simulation and works on integrating it into the curriculum is helpful. In the current study, however, the participants felt this could make the role vulnerable should that person be unavailable; they suggested that having a few educators with expertise would be beneficial.

Implementation and confirmation

There was no dispute in the group regarding the value of high-fidelity simulators in promoting competence and confidence of students. It was apparent that, while the participants were impressed with the standard and versatility of the technology, the impact of the birth simulator on the student experience would be dependent on the instructor's confidence and competence. Similar to the findings of this study, Harder et al (2013) discovered that while educators need to understand how the simulator functions, they also need more emphasis on teaching strategies and scenario-building regarding high-fidelity simulation.

Participants recommended that high-fidelity simulation should be used to complement existing teaching strategies, and that ongoing evaluation would be useful to verify that the simulator is being used effectively within the dynamic syllabus and to its full potential. Rogers (2003) stated that time is an important dimension and the innovation–decision period is the length of time to pass through the process. Individuals will vary; some people require years to develop competence while others move rapidly from knowledge to implementation.

Recommendations

This study has highlighted some key recommendations for promoting preparedness

using a high-fidelity simulator. In addition to the initial developmental workshop, dedicated time and ongoing support should be provided to maintain competence and engagement with the technology. This could be provided through collaboration with peers and sharing of experiences locally and nationally to assist in overcoming challenges.

Clinical skills technicians should be aware of the extent to which midwifery educators rely on them for support in running the scenarios, and that a teamwork approach is vital to the success of implementing the simulator in clinical skills teaching.

This research has explored the impact of a one-off workshop for staff development. However, further research is indicated regarding simulation related to faculty development, such as the effect of various teaching strategies—including online programmes—on educator practices and student learning experiences.

Conclusion

While much of the focus in higher education is on the student, this study has recognised that educator development is vital for successful integration of high-fidelity simulators into the curriculum and, ultimately, a positive impact on the student learning experience. Investment in these expensive technologies requires time, and without structured preparation the innovation–decision process may be compromised.

In addition, supportive learning materials such as online e-learning may be useful to allow accessibility and further learning, and ongoing support from peers and technicians is vital in sustaining competence. **BJM**

Key points

- There is evidence that educators are anxious about implementing high-fidelity simulators into teaching
- Initial face-to-face high-fidelity simulator workshops for educators are recommended for success
- Ongoing support and time should be provided to maintain competence and engagement
- Supportive learning materials, such as online e-learning, may be useful for accessibility and ongoing learning
- Clinical skills technicians are crucial to implementing the high-fidelity simulator in teaching

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