

Why you should read this article:

- To explore how experiential simulation can support family-centred care and enhance emotional preparedness in children's nursing students
- To read about students' experiences of using an infant simulation doll in the context of developing empathy for parents
- To consider the practical, pedagogical and research implications of integrating simulation dolls into nursing curricula to strengthen compassionate practice

Developing empathy for parents through the use of infant simulation dolls

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Abstract

Background The use of simulation can be effective in developing empathy in nursing students, which is particularly valuable in children's nursing where caring for the emotional needs of parents is a fundamental aspect of learning.

Aim To evaluate the use of infant simulation dolls by students undertaking a BSc (Hons) nursing (child) programme in one university in England, and to assess their value in simulation-based learning and in students' development of empathy with the parenting experience.

Method Thirty-seven first-year students were each provided with an infant simulation doll to care for at home for one week. Following completion of the simulation experience, 18 students completed an online survey comprising closed questions with free-text space for expanding on their answers. Quantitative data were analysed using descriptive statistics and qualitative data were analysed thematically.

Findings Five themes emerged: practical use of the doll; views and value of the experience; preparation for and relevance to clinical placement practice; development of empathy for parents; and ideas for other potential uses. Overall, the respondents reported that the simulation experience was positive and provided them with a greater understanding of the demands and emotional toll of parenting. Some respondents highlighted technical challenges with the software and the limited realism of infant simulation dolls.

Conclusion Infant simulation dolls can enhance empathy and reflective learning in children's nursing students, supporting family-centred practice and complementing traditional educational approaches.

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Keywords

child health, education, educational methods, experiential learning, fathers, mothers, parents, practice learning, pre-registration education, professional, simulation

Background

Empathy is a foundational element of nursing that enables nurses to connect with patients and their families by understanding their emotional, physical and psychological needs. McDonagh (2015) noted that empathy involves a deep understanding of another's perspective, which is essential in children's nursing. This is particularly important when working with parents, who are often under immense emotional strain while their child is receiving care. In recognition of its importance, the NHS constitution promotes empathic communication as a pillar of high-quality patient care (Department of Health and Social Care 2023).

Despite its recognised value, developing empathy in nursing students can be challenging due to their limited exposure to emotionally intense caregiving situations. Moudatsou et al (2020) noted that insufficient training in empathy presents a substantive barrier to its development, while other researchers have emphasised the need to equip healthcare students with the necessary skills, experience and guidance to react empathically in clinical settings (Kerasidou et al 2020, Yu et al 2022). Yu et al (2022) noted that understanding the factors that influence empathic behaviours can enable the development of educational interventions that could be implemented to improve the quality of patient care. Interventions such as case-based learning and reflective practice have been shown to have a positive effect on nursing students' empathy scores (Cunico et al 2012, Bas-Sarmiento et al 2019, Petty et al 2020, Petty 2021).

In children's nursing, emphasis should be placed on developing empathy for families, especially parents, as well as for the children receiving care. Children's nurses often act as a bridge between the child, their family and the wider multidisciplinary healthcare team. An empathic understanding of a parent's emotional state can enhance family-centred care and contribute to improved outcomes. Empathic engagement helps nurses to advocate more effectively for both the child and their caregivers, thereby building trust, improving adherence to care plans and reducing emotional distress during hospitalisation (Petty 2021, Sabetsarvestani and Geçkil 2024).

Simulation in nurse education

Simulation replicates clinical scenarios that help students to build competence and confidence in a safe and controlled environment before encountering real-life situations. The Nursing and Midwifery Council (2024) recommends simulated practice learning as part of the 2,300 practice learning hours required in preregistration nursing programmes. This approach supports students in achieving learning outcomes by providing relevant practice experiences and a safe, supportive environment in which to develop their skills. The literature supports the pedagogical effectiveness of simulation in developing clinical and communication skills, decision-making and empathy in nursing students (Theobald et al 2021, Cho and Kim 2024, Kawase et al 2024, McLeish and Cartwright 2025).

The use of simulation to enhance empathy is particularly valuable in children's nursing, where caring for the emotional needs of parents is a fundamental aspect of learning. High-fidelity simulation using infant simulation dolls can foster an empathic understanding of what it may feel like to be a parent. For example, Whiting et al (2024), who explored the value of infant simulation dolls in children's nursing and social work education, reported that many participants gained an enhanced empathic understanding of the parenting role.

Originally designed for use in areas such as teenage pregnancy prevention, infant simulation dolls can be programmed to mimic the needs and behaviours of a newborn, including irregular sleep patterns, frequent feeding and soothing. The use of such dolls can also provide students with an opportunity to reflect on the emotional and physical demands experienced by parents. Much of the research involving infant simulation dolls has tended to focus on pregnancy prevention in school-age adolescents (McCormack and Sim 2005, Herrman et al 2011, Brinkman et al 2016). However, Janeslätt et al (2019) conducted a small-scale feasibility study with six students with learning disabilities, where participants completed eight educational sessions and a three-day caring session using an infant simulation doll. Data from questionnaires and interviews indicated that it was feasible to evaluate such dolls using these methods.

As far as the authors are aware, no other study has explored the role of infant simulation dolls in a simulated practice learning context. This study therefore aimed to address this research gap.

Aim

To evaluate the use of infant simulation dolls by students undertaking a BSc (Hons) nursing (child) programme, and to assess their value in simulation-based learning and in students' development of empathy with the parenting experience.

This aim was grounded in the broader objective of enhancing nursing students' empathy in relation to their ability to provide person-centred, family-centred care.

Method

Setting, participants and design

The study was undertaken in one university in England and used a mixed-methods online survey design developed by the authors.

Participants were first year BSc (Hons) nursing (child) students at a university in England.

The children's nursing education team at the university had access to ten dolls from a company that develops and provides experiential learning resources (the company was not involved in the study). Thirty-seven students were each provided with an infant simulation doll (Figure 1) to care for at home for one week between March and June 2023. The students were advised to programme the doll for 30 hours in total during that period, either as a single block of time or in shorter sessions according to their choice and home situation. The doll cries at different intervals depending on whether it has been set to an 'easy', 'moderate', 'difficult' or 'random' programme and users are expected to respond to and soothe the doll in various ways, such as feeding (Figure 2), rocking or holding (Figure 3), 'burping' and changing its nappy.

The students received preparatory training in programming the dolls, had access to bespoke online resources to support them and were provided with all necessary equipment, including bottles, nappies and clothing.

Figure 1. Infant simulation doll [Q1 please check and approve Figure 1]

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Figure 2. Feeding an infant simulation doll [Q2 please check and approve Figure 2]

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Figure 3. Rocking an infant simulation doll [Q3 please check and approve Figure 3]

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Data collection

The online survey comprised 20 closed questions and provided free-text space for respondents to expand on their answers ('yes', 'no', 'partly') to question 5 and questions 7-20 (see Box 1). This enabled the authors to capture measurable trends and students' nuanced, subjective views.

The online survey was piloted in March 2023 with ten second-year BSc (Hons) nursing (child) students, following which no amendments were made.

Box 1. Summary of the online survey questions

1. Please indicate the gender that you identify with
2. What is your age (years and months)?
3. Please select the option that best describes your ethnicity
4. What is your nationality?
5. Do you have children of your own? If yes, please state the number of children, their ages and whether you feel that having children of your own affected your experience
6. Approximately how long did you look after the doll for?

Questions 7-20 asked respondents to indicate 'yes', 'no' or 'partly' and to expand on the reason(s) for their answer in the space provided

7. Did you experience any challenges setting up the doll?
8. Did you experience any other challenges when looking after the doll?
9. Overall, did you feel that looking after the doll was a positive experience?
10. Did you enjoy looking after the doll?
11. Did you think the doll prepared you for your clinical placement?
12. Where have you been on clinical placement?
13. Approximately how many hours did you complete in clinical placement?
14. Having completed your clinical placement, do you feel that looking after the doll was a useful experience?
15. Do you feel that looking after the doll helped you to develop empathy with parents?
16. Provide details if you can of an example, from your clinical placement, of how your learning from the doll helped to inform your nursing care (please do not divulge any names or patient details)
17. Would you recommend the use of the doll to other BSc (Hons) children's nursing students?
18. Do you feel that first-time expectant parents may find looking after the doll useful?
19. Do you think there are other learning opportunities that the doll could be used for?

20. Is there anything else that you would like to add?

The pilot version of the survey included an additional question: Can you give us your comments on this questionnaire in relation to the clarity of the questions asked and whether they make sense. Thank you

Following completion of the home-based simulation experience, all 37 students were invited by email to complete the survey. An information sheet about its purpose, and instructions on how to access and complete the survey, was attached to the email. The information sheet made it clear that participation was voluntary. Consent was implied by completion of the survey, and this was explained in the information provided.

Data analysis

Quantitative data from the survey responses were collated and analysed using descriptive statistics to identify response patterns and provide a concise summary of findings. Qualitative data extracted from respondents' free-text comments were analysed thematically following Braun and Clarke's (2022) six-step approach. This ensured a rigorous process that captured respondents' own words.

Ethical considerations

Ethical approval was granted by the university's ethics committee with delegated authority (protocol number: SK/SF/UH04593(3)). There was no conflict of interest to declare.

Findings

Quantitative

A total of 18 (49%) of the 37 students who had taken part in the simulation experience completed the survey. Of these 18 respondents, 17 (94%) identified as female and one (6%) as male. Respondents ages ranged from 18 years 9 months to 31 years. The sample was ethnically diverse: 11 (61%) identified as White British; two (11%) as Black Caribbean; two (11%) as Black African; one (6%) as Asian British; and two (11%) as 'Other' (Bangladeshi and Mauritian). Fifteen (83%) respondents were of British nationality, one (6%) was French, one (6%) was Jamaican and one (6%) did not state their nationality. Two (11%) respondents had children of their own (aged eight and 15 years).

Respondents programmed the doll for between six and 48 hours, following the guidance provided and selecting their preferred programme ('easy', 'moderate', 'difficult' or 'random') and time frame. One (6%) respondent chose to exceed the recommended 30-hour maximum.

Qualitative

Thematic analysis of free-text responses generated five themes:

- » Practical use of the doll.
- » Views and value of the experience.
- » Preparation for and relevance to clinical placement practice.
- » Development of empathy for parents.
- » Ideas for other potential uses of the doll.

Findings within each theme are presented below, supported with quantitative data and illustrated with examples of respondents' comments.

Practical use of the doll

Positive comments in response to question 7, 'Did you experience any challenges setting up the doll?', were provided by four (22%) respondents, who reported that the doll was easy to set up and that the instructions were simple and straightforward. Negative feedback from six (33%) respondents mainly concerned the technological aspects related to software and programming the doll, particularly when using a specific make of laptop computer.

Challenges referred to in response to question 8, 'Did you experience any other challenges when looking after the doll?', included that the doll 'kept crying' and that it 'only cried for the first hour or so and then stayed quiet for the remainder of the time'. It is important to note that the students chose different programmes for their doll, so their simulation experiences were not identical.

Views and value of the experience

Of the 18 respondents, 13 (72%) answered 'yes' to question 10, 'Did you enjoy looking after the doll?' (Figure 4). Reasons given related to the insight it gave the respondents into parents' experiences. Some respondents described the experience as 'fun' and 'enjoyable'. One (6%) respondent answered 'no' to this question, describing the doll as 'annoying', while four (22%) indicated that it was 'partly' enjoyable.

Two (11%) respondents who had indicated that they had their own children or siblings explained that while the doll had value, they already had previous experience caring for babies.

Figure 4. Respondents' answers to the question 'Did you enjoy looking after the doll?' (n=18) [Q4 please check and approve Figure 4]

Twelve (67%) respondents answered 'yes' to question 9, 'Overall, did you feel that looking after the doll was a positive experience?' (Figure 5). Several respondents described the experience as new and thought-provoking:

'It was really interesting to see a mother's perspective of how their lifestyle can change.'

Only one (6%) respondent answered 'no' to question 9, describing the experience as 'tiring, stressful because I'd get jumpy and scared when it would cry'. Five (28%) respondents indicated their experience was 'partly' positive, noting that while the exercise had value in understanding the needs of a baby, there were limitations:

'Would have been nice if my doll had done more. I would have felt more like a parent.'

Figure 5. Respondent's answers to the question 'Overall, did you feel that looking after the doll was a positive experience?' (n=18) [Q5 please check and approve Figure 5]

All 18 (100%) respondents answered 'yes' to question 17, 'Would you recommend the use of the doll to other BSc (Hons) children's nursing students? The reasons given related mainly to it being an enjoyable and novel way to learn:

» *'It's a fun and helpful experience for those who have not had any experience with children before.'*

» *'[Using the doll provided] an interesting insight into babies and their emotions.'*

» *'[Using the doll was a] fun and new way to learn.'*

Fifteen (83%) respondents answered 'yes' to question 18, 'Do you feel that first-time expectant parents may find looking after the doll useful?' Comments included that the doll could show parents 'what it will be like for them and the different reasons why babies will cry', 'giving [parents] insight', 'giving [parents] some practice', and helping parents 'feel prepared for what's to come, especially at night' and could be useful 'if they are nervous'. One respondent noted that the doll could be 'very useful for siblings'.

The three (17%) respondents who answered 'no' to question 18 explained that this was due to the lack of realism, noting that the simulation involved a doll rather than a real baby.

Preparation for and relevance to clinical placement practice

Only five (28%) respondents answered 'yes' to question 11, 'Did you think the doll prepared you for your clinical placement?', while eight (44%) replied 'no' (Figure 6). The five respondents who answered yes explained that the experience gave them greater insight into what to expect when caring for a baby:

'It helped me to understand some of the reasons why a baby may be crying or fussy.'

Another respondent, who had completed a placement with a health visitor after using the doll, said:

'When parents came into clinic struggling with the demands of being a parent, I understood that having a baby, while a very lovely time, can also be exhausting and I empathised with them more.'

Some respondents who did not feel that the doll prepared them for their clinical placement said this was because they 'didn't see any babies on my placement' or because they felt the experience lacked realism:

'Not the same as a real baby, where needs are far more complex!'

Five respondents (28%) replied 'partly' to question 11 and said the dolls were useful but had limitations.

Figure 6. Respondents' answers to the question 'Did you think the doll prepared you for your clinical placement?' (n=18) [Q6 please check and approve Figure 6]

Eight (44%) respondents provided examples from their clinical placement (question 16). The three examples below illustrate how caring for the doll had positively influenced the respondents' nursing practice: [Q7 correct?]

- » *'When parents said they had little time for themselves, I understood how easy it is to prioritise the baby over themselves.'*
- » *'Important baby needs – learning about why a baby is crying and what needs to be done – the options.'*
- » *'A baby was admitted, and mum wanted to go home to have a shower and get clean clothes etc. I was asked to oversee the baby while mum was at home. The baby had just been fed and was sleeping when mum went. The baby awoke crying and moaning five minutes after mum had left. I tried to comfort him while [he was] lying in the cot, but he just screamed louder. I picked him up and put him on my shoulder and burped him; soon he became more content again and the crying stopped a big burp came and he was ready to be put back into the cot to sleep some more.'*

Development of empathy for parents

Half the respondents (50%, $n=9$) answered 'yes' to question 15, 'Do you feel that looking after the doll helped you to develop empathy with parents?', while three (17%) responded 'partly' (Figure 7).

Positive comments related to developing empathy, gaining insight into the parental experience and recognising the associated emotional toll:

'It gave me an insight into how difficult it can be and how they may be tired and frustrated, and that it provided a greater understanding of why they are stressed.'

Six (33%) respondents answered 'no' to question 15, explaining that they already felt empathic towards parents or, in some cases, that being a parent themselves had already helped them adopt an empathic approach to others.

Figure 7. Respondents' answers to the question 'Do you feel that looking after the doll helped you to develop empathy with parents?' ($n=18$) [Q8 Please check and approve Figure 7]

Ideas for other potential uses of the doll

Eight (44%) respondents provided suggestions in response to question 19, 'Do you think there are other learning opportunities that the doll could be used for?' Examples included:

- » Teenagers using the doll to prepare for parenting.
- » Teaching child development in schools.
- » Teaching babysitting skills, basic infant care and empathy.
- » Supporting the development of patience and basic life skills.
- » Understanding the constant needs of a young infant.
- » Developing confidence among new or expectant parents.
- » Preparing siblings for the arrival of a new baby.

Discussion

The study aimed to evaluate the use of infant simulation dolls by children's nursing students, and to assess their value in simulation-based learning and in students' development of empathy with the parenting experience. Overall, the findings show that students felt this was a positive experience, which supports the literature that advocates the use of simulation to enhance communication and emotional intelligence skills in healthcare professionals (Bas-Sarmiento et al 2019, Ding et al 2020).

Janeslätt et al (2019) recommended combining the use of simulation dolls with education sessions to strengthen empathy development, highlighting the importance of integrating additional educational support. In addition, Al Gharibi and Arulappan (2020) noted that simulated practice requires careful planning to ensure that learning is maximised. In the present study, respondents received preparation in the use of the dolls and were provided with a range of online support materials, including a video resource, which were accessible throughout the home-based experience. The students could also contact the authors via a bespoke email address if they had any questions or concerns. Following the simulation experience, the students attended classroom-based sessions to enable them to reflect on their learning and relate it to clinical practice.

The experiential nature of the simulation exercise provided the students with autonomy over their learning environment, promoting realism and encouraging personal reflection. This approach differs from previous work on developing empathy in nursing and other healthcare students, which has focused on classroom-based empathy workshops (Cunico et al 2012, Petrucci et al 2016).

Notably, several respondents in the present study did not feel that the experience prepared them for clinical placement, citing either a mismatch between the simulation and their placement environment or a lack of realism. As the dolls used in this study do not simulate additional care needs, for example nasogastric feeding, this may limit the extent to which they can provide insight into the parental experience in clinical settings, where parents may be experiencing additional stress and anxiety due to their child's healthcare condition or needs. This limitation is acknowledged by the authors, as is the timing of the simulation experience. Students who reported the most positive experiences were those whose subsequent clinical placement involved the care of babies. Therefore, consideration could be given, if feasible, to ensuring such simulation experiences are offered before clinical placements that involve caring for babies, to enable students to embed their learning in clinical practice.

Nonetheless, the findings suggest that the use of infant simulation dolls can facilitate a deeper understanding of parental stress and caregiving responsibilities in children's nursing students. This aligns with the central emphasis on family-centred care in children's nursing. Developing a heightened sensitivity to parents' perspectives can not only strengthen emotional rapport but also inform care planning, health education and discharge preparation (Kokorelias et al 2019). Experiencing the realities of parenting stress through simulation can provide students with valuable insight into how to support families navigating hospitalisation and recovery.

Ongoing work

Following completion of this study, the dolls have continued to be used in the BSc (Hons) nursing (child) programme at the university as part of research-based teaching. Second-year students have had the opportunity to experience a simulation doll at home during their research module, enabling them to gain an insight into what it may be like for parents to be a study participant. Similarly, a group of second year students undertaking an elective research placement were given the dolls to care for at home. Feedback from this group highlighted the value of gaining insight into the experiences of parents with a newborn, echoing the findings of the present study.

Limitations

The response rate for this study was 49% ($n=18/37$ eligible students). Response rates are recognised as a challenge in survey research (Holtom et al 2022, O'Connor 2022) and can limit the generalisability of findings. However, the findings align with previous research regarding the potential and actual value of simulation dolls in other areas of health and social care (Janeslätt et al 2019, Whiting et al 2024).

The study sample included a range of ages and ethnicities, but only one male respondent. This reflects the typical demographic profile of children's nursing students at the university. While the sample size was relatively small, it provided a valuable snapshot of diverse perspectives. The voluntary nature of participation may have introduced a degree of response bias. However, variation in personal backgrounds, including students with previous childcare experience and those who were parents themselves, enhanced the richness of the data collected.

Some students experienced technical difficulties and variability in their doll's responsiveness, which may have limited their opportunity to fully engage with the simulation experience and influenced their responses to the survey questions.

Finally, high-fidelity simulation-based activities are associated with high initial costs and logistical challenges, such as setting up the dolls, transporting them to and from participants' homes, and managing their collection and return. These practical considerations should be weighed against the educational benefits of providing this type of experiential learning.

Conclusion

Empathy is a vital skill in children's nursing, particularly in supporting parents during emotionally charged situations. The findings of this study show that the use of an infant simulation doll can provide a novel and meaningful approach to developing empathy in nursing students through experiential learning. While this resource may not fully replicate the complexities of clinical practice, it can promote emotional understanding of parental experiences, empathic behaviour and reflection. This study contributes valuable evidence to children's nursing education, demonstrating the potential of infant simulation dolls as a useful adjunct to traditional teaching

methods for empathy development. Embedding experiential learning opportunities early in nurse education may strengthen students' emotional preparedness and promote more holistic care practices throughout their careers.

Implications for practice

- *Infant simulation dolls can serve as an effective tool for developing empathy in children's nursing students in the context of parental care. Enhanced empathy towards parents may lead to more responsive and compassionate nursing practices that better meet the needs of families.*
- *Incorporating simulation activities into preregistration nurse education programmes may better prepare students for the emotional demands of clinical practice.*
- *Simulation-based learning can be adapted for other healthcare education programmes, such as midwifery, social work and health visiting, and to varying education levels. This type of learning could also extend to research or early years childcare education modules, incorporating post-simulation experience reflection sessions or written accounts as part of formative assessment.*
- *When using home-based simulation interventions, technical training and support resources should be reviewed and strengthened to minimise difficulties.*
- *Universities and healthcare organisations should consider the cost-benefit of investing in simulation equipment as part of comprehensive nurse education strategies.*
- *Larger-scale studies involving more diverse student groups and expectant parents are required, to validate the findings of the present study and to explore the role of infant simulation dolls in preparing individuals for the realities and demands of parenting.*

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