

Educational impact of paediatric palliative simulation study days

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ABSTRACT

Background The use of simulation-based medical/nursing teaching is increasingly widespread. Simulation-based teaching offers an immersive learning experience where professionals can practice communication and practical skills in a safe, authentic environment. We designed a paediatric palliative simulation study day primarily aimed at nursing staff who manage these patients in the community/hospice. We believe this is the first of its kind in the UK.

Aims To establish whether attendance at a paediatric palliative simulation study day improved confidence and knowledge in management of common and/or difficult situations in palliative care.

Method Health professionals working at local paediatric hospices or in associated specialties to palliative care were invited to attend the free 1-day course. 5 scenarios were developed by experienced health professionals working in paediatric palliative care. On the day, participants were asked to complete a questionnaire to check basic demographic data, confidence levels and knowledge (50 true/false questions). Following participation/observation of 5 scenarios, they again completed the same questionnaire regarding confidence levels and knowledge. Results were analysed with Excel and XLStat using basic demographic data and Wilcoxon signed rank two-tailed test.

Results 57 healthcare workers participated in 5 study days. 81% (n=47) professionals described themselves as working primarily in palliative care. Only 35% (n=20) had previously experienced simulation. Based on confidence questions, attendees felt more confident in managing specific palliative scenarios (p<0.0001). Based on true/false questions prestudy and poststudy day, 86% (n=49) of participants improved their knowledge. The median improvement score for the cohort was 3 (p<0.0001).

Conclusions The study demonstrated a significant improvement in confidence and knowledge following the simulation course. This supports further time/financial investment in

developing this type of study day. Simulation is a useful teaching adjunct in paediatric palliative care. The course also provides a valuable opportunity for professionals to network and discuss/share experiences.

BACKGROUND

The use of simulation-based medical education is increasingly widespread. Simulation-based teaching offers an immersive learning experience where professionals can practice communication and practical skills in a safe, authentic environment.¹ There have been a number of studies emphasising the efficacy of simulation,² but to the best of our knowledge, none have involved paediatric palliative care (PPC). The Royal College of Paediatrics and Child Health (RCPCH) supports the use of what the Department of Health calls 'Technology Enhanced Learning' in the delivery and assessment of the paediatric curriculum.³

PPC is a relatively new specialty, modelling itself partially on its well-established allied adult counterpart. Cicely Saunders is recognised for her role in the birth of the hospice movement, with the first adult hospice (St Christopher's Hospice) opening in 1967. Despite this, the first paediatric hospice in the UK (Helen House) did not open until 1982. Since then, a further 46 children's hospices have opened across the UK. Paediatric palliative medicine is now a recognised subspecialty with its own curriculum,⁴ and the RCPCH has acknowledged the need for expert care for children with life-limiting conditions.

With simulation-based education having proved itself as an effective teaching method, the authors felt this use of teaching could be focused towards PPC health professionals. Although death may be the end point of hospice care, management of symptoms continues to be the mainstay of hospice management, and

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deaths are still relatively rare. For example, hospice nursing staff will infrequently manage patients undergoing a compassionate extubation (otherwise known as one-way extubation).⁵ These situations require input from highly trained and experienced health professionals. Relating to end-of-life care, there is only one chance to get it right, and this further supports the educational role of simulation teaching to staff.

A PPC simulation study day was designed and aimed primarily at healthcare professionals who manage these patients in the community/hospice. We believe this is the first of its kind in the UK. The aim was to establish whether attendance at the study day improved confidence and/or knowledge in the management of specific common and/or difficult situations in palliative care.

METHODS

Heads of care at local hospices, community nursing teams, transport teams and paediatric intensive care were approached to send their nurses (and some doctors) to attend a new 1-day paediatric palliative simulation course. Health Education Yorkshire and Humber fully funded the course which was held at Montagu Clinical Simulation Centre⁶ in Mexborough, South Yorkshire. We aimed to recruit 10–12 people per course of varying background and levels of seniority. This ranged from healthcare assistants to paediatric consultants.

The course day started with an opportunity for participants to become familiar with the centre's high-fidelity paediatric manikin (Medical Education Technologies Incorporated, PediaSIM). The manikin is able to simulate pulses, breathing, blinking, pupillary changes and even speak (via a microphone set up in the control room). Faculty was made up of a paediatric palliative consultant, senior paediatric palliative nurses, a paediatric registrar and staff at the simulation centre (consultant anaesthetist and simulation facilitating nurses).

Following the introduction, participants were invited to complete an anonymous questionnaire. Basic demographic data, confidence levels and questions to assess knowledge were all requested. All participants were informed that not completing the questionnaire would not affect the teaching given on the course. Following participation/observation of five scenarios, they again completed the same questionnaire regarding confidence levels and knowledge questions. Qualitative feedback was also sought.

The five scenarios were developed by experienced health professionals working in PPC. These were focused on particularly infrequent or difficult situations that could be encountered on a typical day looking after children with life-limiting conditions. All participants were given the opportunity to partake in at least one scenario each. When not directly involved in the scenario, they were able to watch their

colleagues' progress in the simulation suite via video link. Each scenario lasted between 10 and 20 min and involved participants of varied experience and background. Everyone was asked to work 'in role', thereby allowing for realistic escalation of care. Each team was informed about their patient before their respective scenarios and debrief was held after each scenario to discuss learning points and challenges. All scenarios were recorded for educational value and playback was used, if considered useful, to emphasise learning points.

The role of debriefing in simulation teaching has been reported to be where most of the learning occurs.⁷ It has been described as the "activity that follows a simulation experience led by a facilitator wherein feedback is provided on the simulation participants' performance, while positive aspects of the completed simulation are discussed and reflective thinking encouraged".⁸ It provides opportunity to emphasise important learning points and discuss any issues that may have arisen from the scenario. Approximately equal proportions of time were spent running the scenario and debriefing.

In addition to the scenarios, the authors designed a questionnaire requesting basic demographic data as well as questions regarding confidence and knowledge on particular palliative situations. The confidence questions (figure 1) requested participants to score how confident they felt regarding 12 statements on a Likert 11-point scale (0–10). The knowledge questions were comprised of 50 true/false questions. These were completed under examination conditions.

Statistical analysis

Results were analysed with Excel and XLStat using basic demographic data and Wilcoxon signed rank two-tailed test for non-parametric data.

RESULTS

Health professionals came from all four children's hospices in Yorkshire and Humberside, accompanied by paediatric oncology outreach/Macmillan nurses, and paediatric intensive care unit (PICU) nurses. Staff also attended from Yorkshire's dedicated transport team (Embrace) and the local community neurodisability nursing team.

Fifty-seven health professionals have so far participated in 5 study days. Ninety-five per cent (n=54) were female. Professionals attending ranged from healthcare assistants (band 3) to advanced nurse practitioners (band 8), general practitioners, paediatric registrars and consultants. Doctors made up 14% (n=8) of participants. Eighty-one per cent (n=46) of professionals described themselves as working primarily in palliative care. Only 35% (n=20) had previously experienced simulation. Almost half of participants (47%, n=27) had been trained to verify patient death

On a scale of 0 (not at all confident) to 10 (totally confident) please answer the following questions by circling a number next to each statement.

	Not confident					Confident					
	0	1	2	3	4	5	6	7	8	9	10
Performing an assessment of an unresponsive patient	0	1	2	3	4	5	6	7	8	9	10
Managing a patient having seizures	0	1	2	3	4	5	6	7	8	9	10
Giving an accurate assessment of a patient to consultant on telephone	0	1	2	3	4	5	6	7	8	9	10
Performing basic life support	0	1	2	3	4	5	6	7	8	9	10
Managing a ventilated end of life care patient	0	1	2	3	4	5	6	7	8	9	10
Recognising side effects of opiates	0	1	2	3	4	5	6	7	8	9	10
Managing side effects of opiates	0	1	2	3	4	5	6	7	8	9	10
Discussing end of life care with families	0	1	2	3	4	5	6	7	8	9	10
Managing symptoms in end of life care	0	1	2	3	4	5	6	7	8	9	10
Recognising when a patient has died	0	1	2	3	4	5	6	7	8	9	10
Understanding the process required to verify death	0	1	2	3	4	5	6	7	8	9	10
Knowledge of the legal process surrounding certification	0	1	2	3	4	5	6	7	8	9	10

Figure 1 Confidence questions with Likert scale.

—70% (n=19) of these were nurses who had attended local courses to gain this competency.

Quantitative results

Based on confidence questions, most attendees felt more confident in managing specific end-of-life scenarios ($p < 0.0001$ for each statement) following participation. In eight statements, the median improvement

score was of 2 points, and in the remaining four statements there was a median improvement score of 1 (figure 2).

Based on true/false questions pre-study and post-study day, 86% (n=49) of participants improved their knowledge (figure 3). There was a significant increase in median score following the course (38, IQ 36–40 to 41, IQ 39–44; $p < 0.0001$).

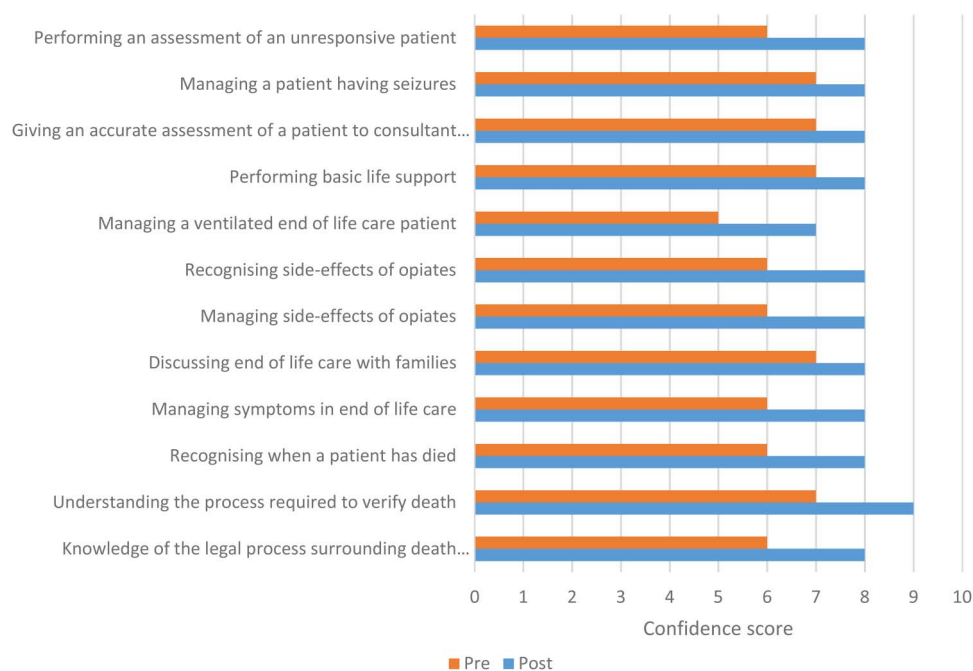


Figure 2 Bar chart depicting improvements in levels of confidence following participation at the course.

that they may not have witnessed before. The feedback from participants regarding this was very positive. This is where simulation scenarios excel at giving confidence and experience to staff handling infrequent situations, particularly where there is only one opportunity to manage the situation right (in the case of death).

The confidence question data show that attendees felt significantly more confident following participation in the course. Particular areas of greater improvement were around specific end-of-life issues, for example, death verification/certification and side effects of opioids. Knowledge and confidence on these topics is essential in order to provide quality palliative care. In a minority of cases, participants appeared to have reduced confidence for certain questions following attendance. The authors speculate that this may be due to relative overconfidence at the start of the course, with gaps in their knowledge being recognised through the scenarios and teaching on the day.

The demonstrated significant improvement in attendees' knowledge following attendance at the course supports the excellent qualitative feedback received. As well as the improvement in knowledge, participants gained from discussing the answers at the end of the day to learn further and discuss potential controversies. The use of preknowledge-based and postknowledge-based questions may contribute to consolidation of knowledge related to the day. This further supports the role of simulation in education. It allows participants a different medium in which to gain experience/knowledge.

It was particularly unusual at the simulation centre that healthcare assistants were involved in simulation scenarios. It was felt really important for this study day to create a realistic environment and allow all levels of staff to benefit. The feedback from the course highlighted the participants' support for the opportunities to network and discuss experiences with health professionals from different backgrounds and grades of knowledge.

There are limitations to this study. The numbers of participants are still relatively small; however, statistically significant results have been achieved despite this. Another limitation with the study design was that the true/false questions that had been seen at the start of the day may have been answered in the course of the day when participants posed questions or discussed with colleagues. This would be very difficult to avoid. Throughout the course, participants performed 'in role', and therefore a lead nurse frequently took charge of the simulation scenario. This meant that some of the more junior members of staff were not always given the opportunity to further challenge themselves. This reflects real-life situations where more senior members take more responsibility, but learning can still be gained from observing those situations.

There have been many studies attempting to validate tools to assess both confidence and competence in simulation-based education. These have had mixed results with a systematic review finding poor limited correlation between self-assessment and observed measures of competence.¹² Other authors have gone on further to acknowledge the dangers of simulation-based assessment leading to 'overestimation of self-confidence'.¹³ However, our study has shown improvement in confidence and knowledge, and in combination, this may translate into competence.

To further improve the current course, there are plans to involve actors in breaking bad news scenarios. A psychologist has also been approached to help in debriefing scenarios and providing input into team-working skills. The course has also highlighted the need for further training regarding the use of the transport ventilators already in use at the hospice. Another extension would be to look at retention of knowledge after particular time periods following attendance at the course.

CONCLUSION

- ▶ This is the first simulation course based primarily on PPC.
- ▶ This study has demonstrated a significant improvement in confidence and knowledge following attendance at the course.
- ▶ The course provides a valuable opportunity for professionals to network and discuss/share experiences. This cross-boundary method of working may improve future working relationships in bringing teams together.
- ▶ This supports further time/financial investment in developing this type of study day.

Simulation has been shown to be a useful teaching adjunct in PPC, providing a non-threatening, patient-safe environment.

ETHICS

This was a service evaluation of a newly developed course. All questionnaires completed by participants were anonymous. Participants were provided with written information how/why the questionnaires they completed would be used. They were advised that participation was not mandatory and would not affect their teaching on the course. Verbal consent was taken prior to completion of questionnaires. The questionnaires also provided further educational structure to discuss potential queries regarding answering some questions. No formal ethics committee approval was sought.

Contributors KR is the main author and responsible for submission. She was involved in scenario design, questionnaire design, teaching on some of the days, compiling results, reviewing results and writing the article. HQ was responsible for the initial planning concept and involved in scenario design, and teaching on some of the days. A-PTM was responsible for the initial planning concept and involved in scenario design,

Education

questionnaire design, teaching on all the days, review of results and review of article.

Competing interests None declared.

Provenance and peer review Not commissioned; externally peer reviewed.

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