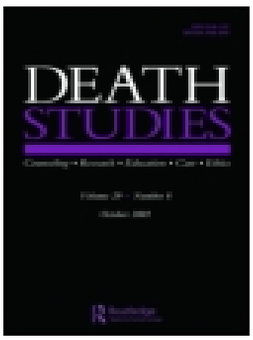

Death Studies

ISSN: 0748-1187 (Print) 1091-7683 (Online) Journal homepage: http://www.tandfonline.com/loi/udst20

Using simulation as a learning experience in clinical teams to learn about palliative and end-of-life care: A literature review

Duncan Randall , David Garbutt & Michaela Barnard

To cite this article: Duncan Randall , David Garbutt & Michaela Barnard (2017): Using simulation as a learning experience in clinical teams to learn about palliative and end-of-life care: A literature review, Death Studies, DOI: 10.1080/07481187.2017.1334006

To link to this article: http://dx.doi.org/10.1080/07481187.2017.1334006

Accepted author version posted online: 25 May 2017.
Published online: 25 May 2017.

DEATH STUDIES
https://doi.org/10.1080/07481187.2017.1334006

Routledge
Taylor & Francis Group

Using simulation as a learning experience in clinical teams to learn about palliative and end-of-life care: A literature review

Duncan Randall[a], David Garbutt[b], and Michaela Barnard[b]

[a]Faculty of Health Sciences, University of Southampton, Southampton, UK; [b]School of Nursing, Midwifery, Social Work and Social Sciences, University of Salford, Salford, UK

ABSTRACT

Simulation has been shown to improve the preparedness of practitioners in acute care. In this review, the authors evaluate using simulation to prepare practitioners to deliver palliative care in multidisciplinary teams. The Joanna Briggs Institute approach was used and seventeen studies selected. The thematic analysis of the literature fitted well with Gabby, Le May, Connell, and Klein's (2014) pyramid approach to health improvement suggesting that simulation can be used in teams to learn technical, soft and learning skills of delivering palliative care. The analysis does not indicate how learning each of these skills interacts nor if simulations in teams should be repeated, or how often.

The use of simulation has become an accepted learning method on university courses, clinical teaching, and work based learning (Bradley & Postlethwaite, 2003). Simulation is now widely used in many high-income countries in health and social care learning (Gillan, Jeong, & van der Riet, 2014; Jeffries, 2012). In the main these simulations scenarios feature acute care either in trauma or intensive care situations (Cant & Cooper, 2010; Stocker et al., 2012). In their review of the use of end-of-life simulation in undergraduate nursing programs, Gillan et al. (2014) pointed out that end-of-life scenarios only started to be used since 2009. The evaluations of simulation learning have shown that these opportunities are welcomed by students and that they increase their understanding of clinically important concepts (Cant & Cooper, 2010). Moreover, they provide the opportunity for students to examine values and analyze caring experiences that allows them to model behavior useful in clinical situations such as decision making (Barnato et al., 2008). Clinical skills have been shown to improve when using simulation (Allinier, Hunt, Gordon, & Harwood, 2006) and student outcomes in terms of perceived confidence and competence following simulation training are comparable to experience gained from time spent in a clinical area (Baillie & Curzio, 2009). Moreover, the use of simulation in learning has been shown to have a positive impact on nurses' levels of confidence when dealing with death and dying (Kurz & Hayes, 2006; White, Coyne, & Patel, 2001).

Despite this evidence of the effectiveness of simulation in education programs current analysis indicates that where palliative and end-of-life care is included in undergraduate curricula it is delivered largely in theoretical form (Bassah, Seymour, & Cox, 2014). Educators cannot guarantee that students will experience palliative or end-of-life care in clinical practice, and when they do have exposure in practice it can be difficult to find time and skilled facilitation to ensure the maximum learning is achieved from the encounter. Given the mainly theoretical approach and lack of reflexive clinical exposure it is perhaps not surprising that health and social care practitioners feel ill prepared and ill equipped to deliver palliative and end-of-life care (Wessel & Rutledge, 2005). The studies referenced above relate to undergraduate learning; there does not appear to be any reviews of how teams delivering palliative care use simulation to learn together.

Palliative and end-of-life care is a relatively new medical subspecialty (only recognized in the United Kingdom in 1995 and in Australia/New Zealand in 1998 (Clark, 2007)). This emerging medical subspecialty status perhaps in part explains the variations seen in palliative and end-of-life care attitudes, values, and practices (Goel et al., 2014) and in the degree to which practitioners in different countries felt prepared, or not (Wessel & Rutledge, 2005) for aspects of delivering palliative care, such as breaking bad news (Goel et al., 2014). Services in palliative care also present a mixed picture with some populations having access to

CONTACT Duncan C Randall D.C.Randall@soton.ac.uk Faculty of Health Sciences, University of Southampton, Highfield, Southampton, SO17 1BJ, UK.

specialist services, and others accessing general health services supported by specialists, and some who have no access to palliative care expertise. Thus, the teams delivering palliative and end-of-life care may be constituted very differently, be perceived as "generalist" or "specialist" and include many different disciplines and professional groups. In addition, the development of palliative services has been different for children with different teams emerging integrated across settings of home, hospice and hospital (Grinyer, 2012).

Learning through simulation would seem to be effective in helping people to learn about complex health and social care situations (Cant & Cooper, 2010; Gillan et al., 2014). The current mainly theoretical learning strategies for palliative and end-of-life care at undergraduate level do not seem to be preparing practitioner for delivering palliative and end-of-life care (Wessel & Rutledge, 2005). Although clinical experience is invaluable, it does not always offer the reflexive environment in which encounters with palliative and end-of-life care can be explored and learning optimized. However, defining *simulation* is problematic in that the term is used to refer to a very wide range of learning methods. The term *fidelity* is often used in simulation and refers to the exactness of replication of an object or situation. Simulation can include low fidelity methods such as staged multidisciplinary team meetings, role playing, online scenarios presented via multimedia and other theater-based methods. High fidelity methods can be described as using manikins augmented with various technologies which attempt to more closely recreate the context of care (Gillan et al., 2014; Parker & Myrick, 2009). However, evaluation of the use of simulation in learning seem to indicate that the level of fidelity is less important as both low and high fidelity learning methods have demonstrated positive outcomes (Cant & Cooper, 2010). Thus, the degree to which technology is used to recreate the context and experience of the clinical situation being simulated seems to be less important than the opportunity to explore clinical situations through realistic simulation.

Through our work teaching end-of-life care, including using simulation, and with clinical partners in the North West Children's Palliative Care Network, we became interested in how simulation might be used to help clinical teams to learn about palliative care. We teach across children's and adult nursing so we wanted to understand both children's and adult teams might learn using simulation. What we were interested in was whether there was evidence in the literature that teams delivering palliative care might be brought together using a simulation exercise to learn about palliative care. These interests and our reading gave rise to the following research questions.

Research questions

- What indications are there in the current literature that educators or clinicians are providing learning experiences in clinical teams using simulation to facilitate learning about palliative and end-of-life care?
- What challenges and opportunities are discussed in the literature on the use of simulation in the design, implementation and evaluation programmes on palliative and end-of-life care in clinical teams?
- In the literature, how are issues of palliative and end-of-life care across the life span addressed in clinical team's learning using simulation?

Method

The authors undertook a systematic literature review using the Joanna Briggs Institute (2014, p. 29) three phase approach and the principles of literature reviewing set out by Aveyard (2014). The research questions were devised and agreed by the first two authors (Duncan Randall and David Garbutt). In accordance with The Joanna Briggs Institute (2014) guidance on qualitative research we reconstructed the questions to aid clarity in our review using the Population, Phenomena of Interest, Context and Outcome (PiCO) format as follows:

Population: healthcare professionals delivering palliative and end-of-life care.
Phenomena of interest: learning from simulation experiences about delivering palliative and end-of-life care across the life span.
Context: Uni and multi professional learning in simulated learning environments.
Outcome: Evaluations of learning from simulation learning experiences and application to clinical practice.

Phase one: Search strategy

An initial search was undertaken to identify key words and words used in titles. In addition, the Medical Sub heading database (PubMed) was searched and search terms revised to reflect MeSH terms. The following search terms constructed with Boolean operators were used

Keyword or subheading search term

High fidelity simulation OR patient simulation OR computer simulation AND palliative OR terminal care AND education OR assessment educational needs OR continuing education OR competency based education

Title word search term

High fidelity simulation OR simulation OR Short OR intense OR compact AND intervention OR programme

OR opportunity OR experience AND learning OR education OR training OR skills acquisition AND palliative OR end of life OR supportive OR hospice OR death OR dying.

Phase two and three: Database searches and selection of studies

The following databases were searched Ovid MEDLINE (R) without revisions 1996–9/18/2014, PsycINFO 2002–September Week 2 2014, and the AISSA database. These databases were used to ensure coverage of medical and of social aspects from a range of health and social care professional groups. Limits were applied in each database to exclude non-human studies, studies published prior to 2004 and those not published in English.

Selection of studies

Two of the authors (Duncan Randall and David Garbutt) independently reviewed the results of the keyword (subject heading) and title word search from each of the databases. The title and abstracts were read and the inclusion and exclusion criteria agreed by the authors were applied independently. The resulting lists of selected papers were reviewed by both authors and a final selection list agreed. Duplicates were removed. The end list of references from all the included papers were reviewed by two of the authors and inclusionand exclusion criteria applied (see Table 1), the selection of additional papers by this snowballing method was agreed by two of the authors (Duncan Randall and David Garbutt).

Analysis

All of the selected papers were analyzed by the authors independently reading and rereading the papers and using inductive reasoning to generate thematic codes which were then discussed and agreed between the authors. A data abstraction table (Table 2) was used as recommended by Aveyard (2014). The thematic open codes shown in Table 2 (e.g., students understanding improved) were discussed by the authors and organized into the axial coding (e.g., technical skills) presented in this article. Duncan Randall analyzed the quality of the selected papers using Pluye et al. (2009) method. The quality of studies was not used as an exclusion criterion as there is no evidence that a score below a certain level on Pluye et al. (2009) scoring is indicative of the inferences from such studies being unsound. Instead the data quality table (Table 3) is provided so that the reader may judge for themselves the degree to which they wish rely on the inferences from the research. For example, a score of 33.3 would indicate that only one third of the quality measures are present in the research report and the reader may wish to consider how reliable and valid the paper's findings are if two thirds of the quality measures for the type of research are not reported.

Findings

The citations retrieved from each of the databases are set out in Table 4 both for the keyword of subject heading search strategy and for the title word search. In the MEDLINE(R) and PsycINFO keyword search the term "assessment educational needs" was omitted as using this term reduced the citations to zero. The string "palliative OR end of life OR supportive OR hospice OR death OR dying" was also omitted in the title word search in these databases as again using this string in the search strategy reduced the citations to zero. In the AISSA database the title word string was replaced with "High fidelity simulation OR simulation OR Short OR intense OR compact AND palliative OR

Table 1. Inclusion and exclusion criteria.

Criteria	Rationale
Inclusion criteria	
Literature published between 2004-2014	Development of simulation facilities, staff and equipment have led to an increasing use of simulation in education over the last decade 5
Empirical research from peer reviewed journals	To provide an evidence base for the development of simulation in palliative and end-of-life learning we wanted to use empirical research sources which had been peer reviewed
Relevant to the research questions	Literature related to interventions to aid the learning of health and social care workers on palliative and end-of-life care
Exclusion criteria	
Literature in languages other than English	The research team does not have access to the cultural experience nor the language skills to interpret literature written in other languages
Reports of non-scenario based learning experiences which do not use peer learning and have no skill to be practiced (skills include communication etc) Reports of text based only learning experiences	Such approaches do not reflect simulation which is immersive, scenario based and uses peer learning to explore the way skills are enacted in simulated clinical contexts
Literature on use of simulation in learning not related to palliative or end-of-life care i.e., trauma or intensive care settings	Our concern is with palliative and end-of-life care across the life span, not with management of acute illness

Table 2. Data abstraction.

Author(s) (year of publication) and study location	Population characteristics	Data collection method/details of study	Technical skills			Soft skills							Learning skills		
			Students understanding improved	PEoLC Nursing practices	Decision making in PEoLC	Inter professional collaboration	Insights into service user views	Emotional preparedness	Modelling	(re) Framing death and dying	Cultural safety	Spirituality	Acceptability to students and learning experience	Student satisfaction and confidence	Debriefing
Barnato et al. (2008) USA	27 doctors (Physicians) from one institution	Qualitative data on decision making and demographic statistics. Observation of simulation			✓	✓		✓	✓						✓
Eaton et al. (2012) USA	30 undergraduate baccalaureate nursing students	Qualitative study hospice based simulation using open questions written responses immediately after simulation and after clinical placement		✓			✓				✓		✓	✓	✓
Ellman et al. (2012) USA	Students from medicine, nursing, chaplaincy and social work	Qualitative analysis of 217 students free text responses and quantitative analysis of 309 postsession questionnaires from 10-14 cycles of the programme (self report only) Online case and low fidelity case conference		✓		✓					✓	✓	✓	✓	
Fabro et al. (2014) USA	21 students on an elective (option) module on end-of-life care in a baccalaureate undergraduate nursing programme	4 students in a pilot study Education Practices Questionnaire and Student Satisfaction and Self Confidence in Learning Tool administered after the simulation session Qualitative analysis of reflection essay		✓			✓			✓		✓	✓	✓	
Fluharty et al. (2012) USA	370 undergraduate nursing students from 4 nursing departments doing medical/ surgical module	As study specific knowledge, communication and satisfaction measures, an adaptation of a 30 item confidence measure	✓										✓	✓	

Gillan et al. (2013) Australia	120 3rd year undergraduate nursing students	Study specific evaluation questionnaire with Likert 10 point scales and open questions			✓			✓					✓	✓	✓
Gilliland et al. (2012) USA	30 pharmacy students	Mixed methods pre-/post test attitudes toward death and competency surveys 30 minute (15 pre-/15 postmortem) high fidelity simulation. Reflective journal and course evaluation				✓				✓				✓	
Ladd et al. (2013) USA	35 undergraduate nursing students	Pre- and postgroup interviews/survey with observation and note taking (interviews were not recorded)			✓			✓	✓	✓				✓	
Leavy et al. (2011) USA	149 undergraduate nursing students	Study specific questionnaire with some scoring elements and focus groups postsimulation			✓			✓					✓	✓	✓
Leighton and Dubas (2009) USA	16 undergraduate nursing students	Course evaluations over 4 semesters					✓	✓					✓	✓	
Moreland et al. (2012) USA	14 Undergraduate nursing students 11 traditional 3 accelerated programmes	Mixed methods quasi experimental of effect of 15 minute high fidelity simulation (Laerdal human patient) A pre-/post test knowledge and self efficacy measure developed for the study and group interviews	✓		✓			✓						✓	
Pullen et al. (2012) USA	Hospice staff and nursing students (70-100)	4 day programme including high fidelity simulation student satisfaction on study specific scoring 1-5 Likert scale and student comments			✓		✓			✓					
Rodriguez et al. (2011) USA	31 clergy	Pre- and postquestionnaire low fidelity simulation	✓									✓		✓	

(*Continued*)

Table 2. Continued.

Author(s) (year of publication) and study location	Population characteristics	Data collection method/details of study	Technical skills			Soft skills							Learning skills		
			Students understanding improved	PEoLC Nursing practices	Decision making in PEoLC	Inter professional collaboration	Insights into service user views	Emotional preparedness	Modelling	(re) Framing death and dying	Cultural safety	Spirituality	Acceptability to students and learning experience	Student satisfaction and confidence	Debriefing
Smith et al. (2012) USA	60 undergraduate nursing students on a legal and ethical module	Postexperience questionnaire comparison of 3 groups, in person, online and high fidelity Included student evaluation (High fidelity rated highest by students ($p < 0.05$)		✓							✓		✓		
Swenty and Eggleston (2011) USA	79 3rd year undergraduate nursing students	Comparison of simulation experiences including a patient death scaled measures of educational practice, simulation design, student satisfaction and self confidence using 0-5 point Likert scales Includes power analysis (0.79–0.95)											✓	✓	
Tuxbury et al. (2012) USA	Undergraduate nursing and theatre students	35 min Live actor simulation (not manikin) using Forum Theatre methods (includes replaying scenes or moments). Qualitative and quantitative immediate evaluation of simulation. A follow up reflection journal entry 1 week postsimulation							✓	✓			✓	✓	
Twigg and Lynn (2012) USA	16 3rd year undergraduate nursing students	Knowledge pre-/posttest and Concerns About Dying Scale and group interview 1 week postsimulation (Qualitative data not reported)	✓	✓				✓	✓				✓		✓

Notes: PEoLC = palliative and end-of-life care.

Table 3. Quality appraisal using Pluye et al. (2009) scoring system.

Author(s)(year of publication) and study location	Methodology	Qualitative objective or question	Appropriate qualitative approach or design or method	Description of the context	Description of participants and justification of sampling	Description of qualitative data collection and analysis	Discussion of researchers' reflexivity	Number of factors presence in reports divided by the number of relevant criteria × 100
Qualitative QUAL								
Eaton et al. (2012)	QUAL	1	1	1	0	1	0	4/6 × 100 = 66.6*%
[a]Gillan et al. (2013)	QUAL	1	1	1	0	1	0	4/6 × 100 = 66.6*%
Ladd et al. (2013)	QUAL	1	1	1	0	1	0	4/6 × 100 = 66.6*%
Leighton and Dubas (2009)	QUAL	1	1	1	0	0	0	3/6 × 100 = 50%

		Appropriate sequence generation and/or randomization	Allocation concealment and/or blinding	Complete outcome data and/or low withdrawal/drop-out	Number of factors presence in reports divided by the number of relevant criteria × 100
Quantitative Experimental QUAN (EXP)					
Fluharty et al. (2012)	QUAN (EXP)	0	0	1	1/3 × 100 = 33.3*%
Rodriguez et al. (2011)	QUAN (EXP)	0	0	1	1/3 × 100 = 33.3*%
Swenty and Eggleston (2011)	QUAN (EXP)	0	0	1	1/3 × 100 = 33.3*%
Twigg and Lynn (2012)	QUAN (EXP)	0	0	1	1/3 × 100 = 33.3*%

		Justification of the mixed methods design	Combination of qualitative and quantitative data collection-analysis techniques or procedures	Integration of qualitative and quantitative data or results	Number of factors presence in reports divided by the number of relevant criteria × 100
Mixed Methods					
Barnato et al. (2008)	Mixed methods	1	1	0	2/3 × 100 = 66.6*%
Ellman et al. (2012)	Mixed methods	0	1	0	1/3 × 100 = 33.3*%
Fabro et al. (2014)	Mixed methods	0	1	0	1/3 × 100 = 33.3*%
Gilliland et al. (2012)	Mixed methods	1	1	0	2/3 × 100 = 66.6*%
Leavy et al. (2011)	Mixed methods	0	1	0	1/3 × 100 = 33.3*%
Moreland et al. (2012)	Mixed methods	1	1	0	2/3 × 100 = 66.6*%
Pullen et al. (2012)	Mixed methods	0	1	0	1/3 × 100 = 33.3*%
Smith et al. (2012)	Mixed methods	0	1	0	1/3 × 100 = 33.3*%
Tuxbury et al. (2012)	Mixed methods	0	1	0	1/3 × 100 = 33.3*%

Notes: *a* Gillan et al., 2013 arguably a mixed methods design but only qualitative data were reported * = recurring.

end of life OR supportive OR hospice OR death OR dying" to yield more than one citation.

From these citations, 17 papers were selected for review using the inclusion/exclusion criteria. No new papers were identified from the search of the selected papers reference lists. See Figure 1, a PRISMA chart detailing the identification and selection process as suggested by Moher, Liberati, Tetzlaff, Altman, and the PRISMA group (2009).

Of the 17 papers selected, four were purely qualitative in methodology, four were quantitative quasi experimental and nine used mixed methods. Although many of the mixed methods studies did not identify this as the methodology being employed, nor gave a rationale for using mixed methods. The majority of papers describe participants who are students on various courses, rather than practitioners in palliative care teams. We refer in this article to students but recognize this will include pre- and postqualification practitioners who may go on to work, or are working in palliative and end-of-life care teams.

Table 4. Findings of the electronic search strategy.

Database	Keyword	Title
Ovid MEDLINE(R) without revisions 1996–9/18/2014 PsycINFO 2002 to September Week 2 2014	21	49
AISSA	461	19

Quality appraisal

Appraising the quality of papers was often challenging because the reports were sometimes more focused on evaluations of the methods used in the simulation (understanding if the simulation worked as a simulation exercise) rather than evaluations of students learning from the simulation (i.e., understanding if simulation helped students understand about palliative and end-of-life care). This meant the reporting of evaluation of learning was sometimes very limited, making it difficult to appraise the quality of the study. However, the qualitative papers seemed the best in terms of quality (mean 62.49 out of 100) with three studies scoring 66.66*. The quantitative quasi-experimental papers scored much lower, however this may be because they were pilot studies for larger studies, which might explain a

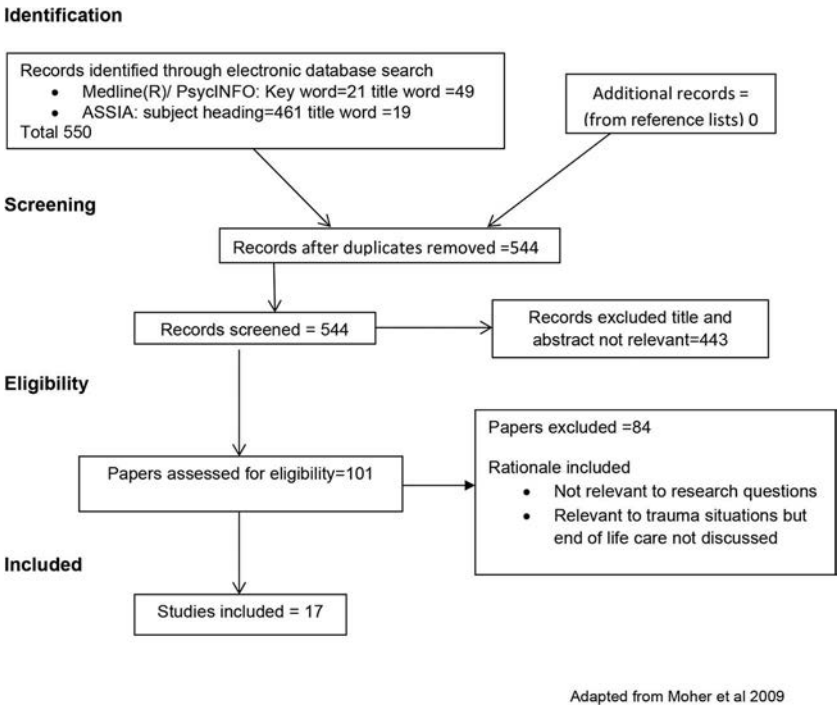

Figure 1. PRISMA chart.

weaker method as teams trialed various methods in the early stages of a project. The mean score was 33.33*. The mixed methods studies present a range of quality scores from 33.33* to 66.66*. Many of these studies were scored by the reviewers as mixed methods studies because they use both qualitative and quantitative methods even though the authors of the papers have not identified the work as mixed methods. This lack of recognition of methodologies being employed may explain the wide variation in quality (mean 44.44*).

Thematic analysis

After completing the open coding the authors considered whether these codes or themes could be organized using Gabby, Le May, Connell, and Klein (2014) concepts of a pyramid approach to health improvement, given that the aim here was to improve how clinical teams provide palliative and end-of-life care. The structure of technical, soft and learning skills (set out in Table 5) seemed to fit well with the open coding and to address the research questions. The health improvement pyramid conception was based on empirical work Gabby et al. (2014) undertook for the Health Foundation. Their thesis is that to improve services one has to build the three sides of the pyramid set on a strong organizational foundation. The three side concepts are technical skills, such as compiling a run chart to show improvement over time, soft skills, including understanding cultural and local contexts, and learning skills, which allow people to learn together as part of a community. Gabby et al. (2014) contention is that one side cannot be successfully built without the other two elements, as without the development of the other aspects the pyramid will collapse, whereas if all three aspects are attended to equally a successful pyramid can be constructed to reach its summit. Understanding the technical skills of how to improve health is only useful if combined with understanding how to implement change in a local culture and if one has the skills to facilitate other learning about health improvement.

Table 5. Axial coding after Gabby et al. (2014) pyramid approach to health improvement.

Technical skills	Soft skills	Learning skills
Students understanding improved PEoLC Nursing practices	Interprofessional collaboration	Acceptability to students as a learning experience
Decision making in PEoLC	Insights into service user views	Student satisfaction and confidence
	Emotional preparedness	Debriefing
	Modelling	
	(re)Framing death and dying	
	Cultural safety	
	Spirituality	

Obviously, the concept requires some adaptation. Instead of a strong organizational foundation, we might consider that students have experience of death and dying from their own lives and communities, which they bring to their learning. We suggest that students might need a solid foundation of understanding their own beliefs and conceptions of death and dying upon which to base their learning about palliative and end-of-life care. Students who have recent experience, or are experiencing, a threat to the life of a close relative, or friend, or who are caring for someone who is dying, may find their core beliefs and conceptions of death and dying being challenged. They may find it more difficult to learn, to build a stable pyramid because for them the foundations are being shaken. This "base of the pyramid" phenomenon is only obliquely referred to in the papers in this review. Much as in the Gabby et al. (2014) study, the organizational base is assumed (Gabby et al. studied organizations with a good track record for health improvement) here too there is in some papers an assumption that students may have experience of death, dying, and loss (Fabro, Schaffer, & Scharton, 2014; Gilliland, Frei, McNeill, & Stovall, 2012; Pullen et al., 2012; Tuxbury, McCauley, & Lement, 2012).

The other three side concepts from Gabby et al. (2014) pyramid would seem to provide a useful way of understanding the students' learning from simulation about palliative and end-of-life care. Technical skills relate to students understanding of the technical aspects of delivering palliative and end-of-life care, such as nursing practices and understanding decision making in end-of-life care. The soft skills relate to multiprofessional and interdisciplinary understanding, how the student understands care through cultural and spiritual lens, by observing others and from reflexion on service user insights. Lastly, the learning skills are evident in the acceptability of simulation as a learning experience and how the experience affects students' confidence in their ability to deliver care and reflect on their learning from the simulation.

Technical skills

Although only three studies measured improvements in students understanding about palliative and end-of-life care (Fluharty et al., 2012; Moreland, Lemieuxy, & Myers, 2012; Rodriguez, Johnson, Culbertson, & Grant, 2011), there appeared to be no difference between students who took a more active role (role playing a nurse delivering care) and those who purely observed and participated in debriefing. These studies also used high and low fidelity. Twigg and Lynn (2012) were unable to demonstrate a significant improvement in students understanding from participating in simulation.

More studies addressed whether students had learnt about nursing practices through their participation in the simulation (Ellman et al., 2012; Gillan, Parmenter, van der Riet, & Jeong, 2013; Leavy, Vanderhoffy, & Ravert, 2011; Smith, Witt, Klaassen, Zimmerman, & Cheng, 2012). However, studies that included other professions did not report participants recognizing the role of nurses (Ellman et al., 2012). Again these studies used a variety of simulation scenarios both low and high fidelity. Only one study (Barnato et al., 2008) looked at decision making in end-of-life care, the participant were all medical practitioners from one institution.

Soft skills

Interprofessional collaboration was discussed in only four studies, which in all but one case were multiprofessional studies. The Gilliland et al. (2012) study only involved pharmacy students but was the only single professional study to recognize the interdisciplinary aspects of palliative and end-of-life care. The three studies that report participants gaining insight into service user views were all nursing studies (Eaton, Floyd, & Brooks, 2012; Fabro et al., 2014; Leighton & Dubas, 2009). Seven studies found that simulation allows students to gain insights into how they personally might feel when caring for a dying person. These insights are perhaps linked to the way simulation allowed students to observe how other healthcare workers deal with delivering palliative care with the potential to model the behavior of others in the simulation. There was a good deal of variation in the studies, which reported how students use their simulation learning to frame or reframe death and dying and understand cultural or spiritual aspects of palliative and end-of-life care. Some report both the students' personal reflection on death and dying in communities using cultural and spiritual lenses, but other studies suggest personal reflection on death but not cultural aspects of palliative care (Fabro et al., 2014). Some reported reflection on dying without either the student's understanding of cultural or spiritual aspects being recognized (Gilliland et al., 2012; Ladd, Grimley, Hickman, & Touhy, 2013).

Learning skills

Only two studies reported none of the aspects of student learning (Barnato et al., 2008; Pullen et al., 2012). The other reviewed studies identified that students recognized simulation as an acceptable and suitable learning experience. All the studies suggest students were satisfied with their learning experience and feel the simulation learning experience is both valid and

reliable. All the studies also reported that simulation experience increased students' confidence in delivering care. However, despite debriefing being an integral part of simulation scenarios (Jeffries, 2012), only five studies commented on the learning from debriefing.

Discussion

The literature reviewed here indicates that in answer to our first research question there are learning experiences using simulation that address palliative and end-of-life care issues which are being used with clinical practitioners from various professions and disciplines that work in palliative and end-of-life care teams. However, none of these studies describe the use of simulation in clinical care teams who deliver services together to a cohort of people. The design, structure, and evaluation of these learning opportunities are variable. This means that important aspects are sometimes omitted such as cultural aspects of end-of-life care or evaluating debriefing opportunities. None of the studies report the use of simulation in case reviews to explore recent team performance in specified cases or circumstances. However, the challenges of delivering simulation learning outside longer credit bearing programs receives little attention in the literature. This makes it difficult to evaluate the potential cost or benefits of establishing and delivering palliative and end-of-life care simulation in clinical teams. Although, the lack of evidence that the fidelity of the simulation is important may indicate that low fidelity simulation could be used, which requires little technical equipment.

In answering our second research question the opportunities and especially the benefits in student confidence and competence are given much more attention in the studies. Although it is encouraging to reflect that all these studies showed improvement in students understanding and confidence in delivering palliative and end-of-life care none of these studies looked at dose effect. These improvements may fade over time and the activity needs to be repeated to maintain understanding and behaviors. It has also not been shown whether the changes in confidence and understanding affected delivery of care. We do not know from these studies if the confidence and understanding is permanent, or if repeated exposure to simulation learning is required. If so, what is the dose, and how often does it need to be applied? This raises questions as to whether there is an initial dosage, perhaps an extended simulation experience followed by shorter reminder or maintenance doses of simulation. In this study, we excluded online or virtual simulations, based on the fact that they do not allow for skill demonstration or peer learning through observation. However, as immersive technologies advance, simulations online might become useful if not for an initial dose then for maintenance.

What is also unclear is the interaction of theoretical content and simulation. This will be a particular challenge for simulation learning in clinical teams where team members may have very different levels of understanding prior to the simulation. A majority of papers mention some other learning activities delivered either prior or alongside the simulation. However, it is not clear how the effect of simulation is being measured controlling for the effects of other learning opportunities, even in those studies that measure understanding (Fluharty et al., 2012; Moreland et al., 2012; Twigg & Lynn, 2012). Nor is there evidence of an underpinning pedagogy of simulated learning that might support Parker and Myrick's (2009) critique that simulation has developed with technical advances without full consideration of how people use such technologies to learn.

Aspects of palliative and end-of-life care across the life span seem to be missing from the literature, there is only one study that included a pediatric scenario but the differences between adult and child simulated scenario is not analyzed (Leavy et al., 2011). Thus, our third research question remains unanswered, which is perhaps indicative of how children's palliative care services have developed differently from adult services. Children's palliative and end-of-life care requires the technical, soft, and learning skills described in the studies for adults to be applied in a context of children living childhoods (Randall, 2016). For example, interprofessional collaboration is different for children's nurses as they need to work with social care, and education professionals as well as parents and the child's other carers.

In considering the utility and validity of the Gabby et al. (2014) pyramid approach, six of the studies do not include all three elements, although some of these studies have a limited report of the evaluation of the simulation learning (Fluharty et al., 2012; Gilliland et al., 2012; Leighton & Dubas, 2009; Pullen et al., 2012; Swenty & Eggleston, 2011; Tuxbury et al., 2012). The remaining 11 studies include elements of all three skills factors (technical, soft, and learning), which may support the view that Gabby et al.'s (2014) concept is a good fit as a frame for analysis. However, none of these studies test the interdependence of the skills. All three might be present (in the majority of studies) but not dependent on each other as suggested by Gabby et al. (2014) pyramid concept. Further research would be required to test the hypothesis that these factors work in concert. In designing such further research, it would be helpful to explore the base of the pyramid that is

the students understanding and experiences of death and dying. The assumption made above that the three factors require a solid base needs to be verified. In addition, further discussion and thought might be required to explore the ethical, moral and practical issues of learning about death and dying. Currently there would seem to be informal and often variable approaches to dealing with a student who is experiencing personal or professional difficulties surrounding death and dying at the time of study. Although we might all agree that one should not, and perhaps could not, force someone to learn about palliative and end-of-life care, the dilemma remains that communities expect health and social care workers to be able to help them with dying and death.

Based on our work in this study we recommend that simulation can be used with multiprofessional clinical palliative and end-of-life care teams. The evidence suggests that low or high fidelity simulation can be used to improve understanding and confidence in delivering care. Although not conclusive, we would suggest there is enough evidence to warrant adopting a pyramid approach to simulation in clinical teams where technical, soft, and learning skills are all addressed in the design of both the simulation and the debrief exercises.

We would urge further consideration to be given to the design, structure, and content of theoretical resources used alongside simulation learning. Further research to evaluate the dose effect of simulation experiences and to evaluate if the pyramid factors work in concert, are interdependent, or not, and to verify if learning is affected by the students current understanding and experience of death and dying. Finally, further research is required to evaluate the use of simulation in teams that deliver palliative and end-of-life care to neonates, children, and young people as well as to other underserved groups.

For many clinical practitioners, simulation courses may be the only opportunity to develop and explore their practice. Although it cannot replace reflective clinical experience it does offer a systematic way to learn how to deliver better palliative care.

References

Allinier, G., Hunt, B., Gordon, R., & Harwood, C. (2006). Effectiveness of intermediate-fidelity simulation training technology in undergraduate nursing education. *Journal of Advanced Nursing*, *54*, 359–369. doi:10.1111/j.13652648.2006.03810.x

Aveyard, H. (2014). *Doing a literature review in health and social care: a practical guide* (3rd ed.). Maidenhead, England: Open University Press, McGraw Hill Education.

Baillie L., & Curzio, J. (2009). Students' and facilitators' perceptions of simulation in practice learning. *Nurse Education in Practice*, *9*, 297–306. doi:10.1016/j.nepr.2008.08.007

Barnato, A. E., Hsu, H. E., Bryce, C. L., Lave, J. R., Emlet, L. L., Angus, D. C., & Arnold, R. M. (2008). Using simulation to isolate physician variation in ICU admission decision making for critically ill elders with end-stage cancer: A pilot feasibility study. *Critical Care Medicine*, *36*, 3156–3163. doi:10.1097/CCM.0b013e31818f40d2

Bassah, N., Seymour, J., & Cox, K. (2014). A modified systematic review of research evidence about education for pre-registration nurses in palliative care. *BMC Palliative Care 13*, *56*. doi:10.1186/1472-684X-13-56

Bradley, P., & Postlethwaite, K. (2003). Simulation in clinical learning. *Medical Education*, *37*, 1–5. doi:10.1046/j.1365-2923.37.s1.1.x

Cant, R. P., & Cooper, S. J. (2010). Simulation-based learning in nurse education: Systematic review. *Journal of Advanced Nursing*, *66*, 3–15. doi:10.1111/j.1365-2648.2009.05240.x

Clark, D. (2007). From margins to centre: A review of the history of palliative care in cancer. *Lancet Oncology*, *8*, 430–438. doi:10.1016/S1470-2045(07)70138-9

Eaton, M. K., Floyd, K., & Brooks, S. (2012). Student perceptions of simulation's influence on home health and hospice practicum learning. *Clinical Simulation in Nursing*, *8*, e239–e247. doi:10.1016/j.ecns.2010.11.003

Ellman, M. S., Schulman-Green, D., Blatt, L., Asher, S., Viveiros, D., Clark, J., & Bia, M. (2012). Using online learning and interactive simulation to teach spiritual and cultural aspects of palliative care to interprofessional students. *Journal of Palliative Medicine*, *15*, 1240–1247. doi:10.1089/jpm.2012.0038

Fabro, K., Schaffer, M., & Scharton, J. (2014). The development, implementation, and evaluation of an end-of-life simulation experience for baccalaureate nursing students. *Nursing Education Perspectives*, *35*, 19–25. doi:10.5480/11-593.1

Fluharty, L., Hayes, A. S., Milgrom, L., Malarney, K., Smith, D., Reklau, M. A., Jeffries, P., & McNelis, A. M. (2012). A multisite, multi-academic track evaluation of end-of-life simulation for nursing education. *Clinical Simulation in Nursing*, *8*, e135–e143. doi:10.1016/j.ecns.2010.08.003

Gabby, J., Le May, A., Connell, C., & Klein, J. H. (2014). *Skilled for improvement? Learning communities and the skills needed to improve care: An evaluative service development*. London, England: Health Foundation.

Gillan, P. C., Jeong, S., & van der Riet, P. J. (2014). End of life care simulation: A review of the literature. *Nurse Education Today*, *34*, 766–774. doi:10.1016/j.nedt.2013.10.005

Gillan, P. C., Parmenter, G., van der Riet, P. J., & Jeong, S. (2013). The experience of end of life care simulation at a rural Australian university. *Nurse Education Today*, *33*, 1435–1439. doi:10.1016/j.nedt.2012.11.015

Gilliland, I., Frei, B. L., McNeill, J., & Stovall, J. (2012). Use of high-fidelity simulation to teach end-of-life care to pharmacy students in an interdisciplinary course. *American Journal of Pharmaceutical Education*, *76*(4), 66. doi:10.5688/ajpe76466

Goel, A., Chhabra, G., Weijma, R., Solari, M., Thornton, S., Achondo, B., … Kalra, O. P. (2014). End-of-life care attitudes, values, and practices among health care workers. *American Journal of Hospice and Palliative Medicine*, *31*, 139–147. doi:10.1177/1049909113479440

Grinyer, A. (2012). *Palliative and end of life care for children and young people: Home, hospice and hospital*. Chichester, England: Wiley-Blackwell.

Jeffries, P. (2012). *Simulation in nursing education: From conceptualization to evaluation* (2nd ed.). New York, NY: National League for Nursing.

Kurz, J. M., & Hayes, E. R. (2006). End of life issues action: Impact of education. *International Journal of Nursing Education Scholarship*, *3*(1). doi:10.2202/1548-923X.1189

Ladd, C., Grimley, K., Hickman, C., & Touhy, T. A. (2013). Teaching end-of-life nursing using simulation. *Journal of Hospice & Palliative Nursing*, *15*, 41–51. doi:10.1097/NJH.0b013e31826251f6

Leavy, J. D., Vanderhoffy, C. J., & Ravert, P. K. (2011). Code simulations and death: Processing of emotional distress. *International Journal of Nursing Education Scholarship*, *8* (1), 16. doi:10.2202/1548-923X.2203

Leighton, K., & Dubas, J. (2009). Simulated death: An innovative approach to teaching end-of-life care. *Clinical Simulation in Nursing*, *5*, e223–e230. doi:10.1016/j.ecns.2009.04.093

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G. the PRISMA group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *British Medical Journal*, *339*, 332–336. doi:10.1136/bmj.b2535

Moreland, S. S., Lemieuxy, M. L., & Myers, A. (2012). End-of-life care and the use of simulation in a baccalaureate nursing program. *International Journal of Nursing Education Scholarship*, *9*(1), 9. doi:10.1515/1548-923X.2405

Parker, B. C., & Myrick, F. (2009). A critical examination of high-fidelity human patient simulation within the context of nursing pedagogy. *Nurse Education Today*, *29*, 322–329. doi:10.1016/j.nedt.2008.10.012

Pluye, P., Gagnon, M. P., Griffiths, F., & Johnson-Lafleur, J. (2009). A scoring system for appraising mixed methods research, and concomitantly appraising qualitative, quantitative and mixed methods primary studies in mixed studies reviews. *International Journal of Nursing Studies*, *46*, 529–547. doi:10.1016/j.ijnurstu.2009.01.009

Pullen, R. L., McKelvy, K., Reyher, L., Thurman, J., Bencini, P., Taylor, T. D., … Robinson, L. (2012). An end-of-life care interdisciplinary team clinical simulation model. *Nurse Educator*, *37*, 75–79. doi:10.1097/NNE.0b013e3182461be3

Randall, D. (2016). *Pragmatic children's nursing: A theory for children and their childhoods*. Oxford, England: Routledge.

Rodriguez, E., Johnson, G. A., Culbertson, T., & Grant, W. (2011). An educational program for spiritual care providers on end of life care in the critical care setting. *Journal of Interprofessional Care*, *25*, 375–377. doi:10.3109/13561820.2011.573104

Smith, K. V., Witt, J., Klaassen, J., Zimmerman, C., & Cheng, A. (2012). High-fidelity simulation and legal/ethical concepts: A transformational learning experience. *Nursing Ethics*, *19*, 390–398. doi:10.1177/0969733011423559

Stocker, M., Allen, M., Pool, N., Costa, K., Combes, J., West, N., & Burmester, M. (2012). Impact of an embedded simulation team training programme in a paediatric intensive care unit: A prospective, single-centre, longitudinal study. *Intensive Care Medicine*, *38*, 99–104. doi:10.1007/s00134-011-2371-5

Swenty, C. F., & Eggleston, B. M. (2011). The evaluation of simulation in a baccalaureate nursing program. *Clinical Simulation in Nursing*, *7*, e181–e187. doi:10.1016/j.ecns.2010.02.006

The Joanna Briggs Institute. (2014). *Joanna Briggs Institute reviewers' manual* (2014 ed.). Adelaide, Australia: The Joanna Briggs Institute.

Tuxbury, J. S., McCauley, P. M. W., & Lement, W. (2012). Nursing and theatre collaborate: An end-of-life simulation using forum theatre. *Journal of Nursing Education*, *51*, 462–465. doi:10.3928/01484834-20120615-02

Twigg, R. D., & Lynn, M. C. (2012). Teaching end-of-life care via a hybrid simulation approach. *Journal of Hospice and Palliative Nursing*, *14*, 374–379. doi:10.1097/NJH.0b013e31824ea261

Wessel, E. M., & Rutledge, D. N. (2005). Home care and hospice nurses' attitudes toward death and caring for the dying: Effects of palliative care education. *Journal of Hospice and Palliative Nursing*, *7*, 212–218. doi:10.1097/00129191-200507000-00012

White, K. R., Coyne, P. J., & Patel, U. B. (2001). Are nurses adequately prepared for end-of-life care? *Journal of Nursing Scholarship*, *33*, 147–151. doi:10.1111/j.1547-5069.2001.00147.x