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Simulation training for improving compassionate care of older people: An independent evaluation of an innovative programme for inter-professional education

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MeSH Terms: simulation; team training; patient-centred care; communication

ABSTRACT

This paper describes the evaluation of a two-day simulation training programme for staff designed to improve inpatient care and compassion in an older persons' unit.

Objective

The programme was designed to improve inpatient care for older people by using mixed-modality simulation exercises to enhance empathetic and compassionate care.

Methods

Healthcare professionals took part in a) a one-day human patient simulation course with six scenarios and b) a one-day ward-based simulation course involving five one-hour exercises with integrated debriefing. A mixed-methods evaluation included observations of the programme, confidence rating scales and follow-up interviews with staff at 7-9 weeks post-training.

Results

Observations showed enjoyment of course but some anxiety and apprehension about the simulation environment. Staff self-confidence improved after human-patient simulation ($t= 9$; $df = 56$; $p<.001$) and ward based exercises ($t= 9.3$; $df= 76$; $p<.001$). Thematic analysis of interview data showed learning in teamwork and patient care. Participants thought that simulation had been beneficial for team practices such as calling for help and verbalising concerns and for improved interaction with patients.

Areas to address in future include widening participation across multi-disciplinary teams, enhancing post-training support and exploring further which aspects of the programme enhance compassion and care of older persons.

Conclusion

The study demonstrated that simulation is an effective method for encouraging dignified care

and compassion for older persons by teaching non-technical skills which focus on team skills and

empathetic and sensitive communication with patients and relatives.

INTRODUCTION

This paper describes a two-day simulation training programme to improve care and compassion

for healthcare professionals working in the care of older people.

Older people (65+) are the greatest users of health related services accounting for 70 per cent of

hospital bed days, 60 per cent of hospital admissions, 80 per cent of emergency re-admissions

and 80 per cent of hospital deaths. [1] Currently, 70 per cent of the UK health budget is spent on

those aged over 65. [2]

Recently, a number of high profile investigations into the quality of care provided to older people

in hospital have highlighted serious shortcomings. [3][4] An editorial in the BMJ [5] argued that to

improve the quality of care for older people, deficits in specific knowledge, skills and attitudes of

healthcare staff needs to be addressed. Related concerns about the absence of speciality training

in some medical and nursing curricula have been expressed elsewhere. [6][7]

Simulation training

Caring for older people requires specialist skills in dealing with their complex healthcare needs,

including increased vulnerability to a range of problems, such as infections, falls, incontinence,

and adverse drug reactions, and in effectively providing care despite high rates of sensory and

cognitive deficits and multiple co-morbidities. [8][9] Simulation training has been suggested as a

partial answer to this problem; it provides an immersive, dynamic environment in which learners can participate actively and practice skills in a risk free environment. [10]

Simulation training in post-qualification nursing and associated professions has been slow to develop compared to simulation in medicine. [11] [12] Its use in nursing has been most common in medical and anaesthesiology contexts and with undergraduate students rather than for continuing education.[10] The few published evaluative studies of simulation training for nurses report mixed results, for example some studies have found that students thought the training was beneficial but felt apprehensive or anxious during it.[13] [14] Others have found that students reported a positive and enjoyable experience, [15] an increase in confidence, [14] increased knowledge, [15] [16] and increased knowledge but no change in confidence. [17]

There are relatively few reports of simulation for training skills in the care of older people, despite reports that this is a powerful way for students to engage with the experience of their older patients. [18] A continuing education programme for nurses incorporating simulation for the core competencies of geriatric nursing has also been reported and shown to be effective. Scores on measures of knowledge, perceived quality of the training, perceived skills gained and the relevance of the skills to the clinical setting increased from pre to post-test. [8] Recently, Liaw et al. (2011) reported the development of a checklist for rating skill acquisition in simulation for detecting deteriorating older patients, indicating continuing developments in the application of simulation in this area. [19]

Simulation for non-technical skills

Recognition of the role that breakdowns in communication and teamwork play in patient safety incidents has led to simulation being increasingly used for non-technical skills (NTS) training,

which has roots in Cognitive Task Analysis and Crew Resource Management techniques developed in aviation. [20] Although NTS is a general term, its application in healthcare (and elsewhere) has tended to focus on features of cognitive performance such as situational awareness, planning and decision making. [21] [22]

Critical NTS for nurses are likely to include effective communication in the delivery of care. For older people, especially those with co-morbidities, eliciting reports of concerns and changes is crucial as is empathetic nursing and maintaining patient dignity. Effective teamwork also requires highly developed communication skills. The value of simulation training for combining professional knowledge [23] and raising inter-disciplinary awareness has been highlighted. [24] It is, however, rare for members of the same team to train together, as is common in other industries such as aviation. [25]

Although Mitchell et al. (2010) note the importance of social communication skills, [26] there have been few reports of simulation being used specifically to enhance these, except in psychiatric nursing. [27] We are not aware of previous studies specifically addressing compassionate care through NTS simulation training, with debriefing to allow staff to explore the feelings and emotions associated with the delivery of healthcare.

Modality

Different types of simulation used in healthcare include static part-task trainers, simulated patients (actors or standardised patients) and computer-enhanced mannequins. Yaeger et al. (2004) suggest a tripartite classification of simulation fidelity: low (skills practice in isolation); moderate (minimal cues to suspend disbelief) and high (immersive and hands-on). [28] Importantly, assessments of relatively low fidelity simulators show effectiveness for the

acquisition of nursing skills. [29] Other important dimensions which affect learning are the environmental and psychological aspects of the simulation [37] The choice of simulation modality and fidelty should be underpinned by learning objectives [30] and it should not be assumed *a priori* that high fidelity simulation will always be more effective than low or medium fidelity. [31]

A key principle in simulation is that learning is facilitated via construction of an active learning environment rather than simple delivery of content. [32 33]

Outcomes and sustainability

Theoretical models provide a systematic framework within which the various outcome measures can be identified, but few simulation studies have used a theoretically driven evaluation. [34] Measured outcomes from simulation education or training can be qualitative [35 36] but historically are more usually quantitative based on multiple-choice questionnaires. [37] Levett-Jones et al. (2011) argue that multiple choice questionnaires (MCQs) are convenient to administer and relatively uncomplicated to analyse. [38] Very few studies include longitudinal follow-up with participants after they have returned to practice and there is therefore little evidence about how the skills learned in simulation are integrated into clinical practice [34] Thus questions remain about transfer to practice [39 34] and the sustainability of knowledge over time [37 40] and this has been a relatively neglected area of methodology. [34 41]

Aims and objectives

This study evaluated the simulation training component of a comprehensive development programme incorporating different modules and teaching methods. The broad aim of the whole programme was to improve the quality of care in a department of ageing and health consisting of three care wards.

The simulation programme: a) involved members of the inter-professional team; b) used mixed modalities incorporating human-patient simulation (HPS) in a high-fidelity simulation centre and ward- based simulation (WBS) exercises; c) addressed empathetic and communication skills; d) was evaluated independently using mixed methods including follow-up 7-9 weeks post-training. Specific learning objectives were:

1. Participants would form a more effective team underpinned by communication skills

2. Participants would show enhanced patient-centred care, including sensitivity to privacy and dignity, underpinned by an appreciation of how the ageing process impacts sensory, motor, cognitive and psychological functioning

3. Participants would show effective and empathetic skills for communicating with patients and relatives

The Integrated Model of Training Evaluation and Effectiveness (IMTEE) [42] was used to design the evaluation; the model identifies learners' reactions, post-training self-efficacy, cognitive learning, training performance, transfer performance and organisational results as key outcomes.

METHODS

Simulation training

This study took place in a tertiary hospital trust providing a range of specialist older persons' services. An independent review of nursing in the older persons' unit identified the need for a focus on continual improvement and more holistic, patient-centred care. The broader two week development programme, designed to meet these needs, involved closure of each of the three unit wards in turn, allowing each of their inter-professional teams to attend dedicated simulation training days as a group. The simulation training consisted of a one-day session in a fully

equipped high fidelity simulation centre using human patient simulation (HPS) scenarios and a one-day session of ward-based simulation (WBS) using a mixture of role plays, exercises using part task trainers and an ageing suit to simulate the experience of being older. Each day ran multiple times to accommodate all staff on the unit in groups of n= 20-30.

The HPS course consisted of six scenarios (Table 1), using a combination of mannequins and actors, over the course of a day. Each lasted approximately 15 minutes, followed by a 45 minute facilitated debrief concentrating on NTS. Staff participated directly in at least one scenario and observed all other scenarios via video link so that everyone could contribute to each debrief. Debriefs were structured and consisted of a descriptive, analysis and application phase [54] and were developed using guides for best practice. [43 44] Discussions were facilitated by clinicians and trained professionals from the simulation centre and included a focus on reflective clinical practice. [45]

The WBS course consisted of five one-hour exercises with inter-professional involvement (see Table 1). Scenarios and exercises were designed through inter-professional collaboration of senior nursing and medical staff, HPS specialists and educationalists. They were intended to cover a range of common acute and chronic issues and to allow the healthcare assistants, nurses and physiotherapy staff to play a significant role before requiring medical input. Each exercise had an integrated debrief encouraging reflective practice and focusing on NTS.

Scenarios and exercises are shown in Table 1.

Table 1   Description of 11 training modules using human patient simulation (HPS) scenarios and ward based simulation (WBS) exercises

Topic	Simulation device(s)	Scenario/exercise	Targeted skills
High Fidelity Simulation Centre (HFSC)			
Gastro-Intestinal (GI) bleed	Mannequin HCA plant	78 year old female patient; unwell; invisible lower GI bleed	Calling for help; teamwork; communication
Delirium	Actor HCA plant	81 year old male patient; agitated	Empathetic communication
Clostridium Difficile	Actor Mannequin	88 year old male patient; confirmed C. Diff. diarrhoea, concerned relative	Communicating effectively with relative
Busy ward	Actors Mannequin	Various patients; busy weekday; unwell patient; transfers and discharges	Teamwork, communication, using available resources Delegating and prioritising
Hospital at night	Actor HCA plant SpR/SNP role on telephone	85 year old female patient; sort of breath and tachycardic; unwell; PAR score 5	Calling for help, using available resources
Clinical communication	Actor	Discussion with relative; patient declined surgery, deteriorated; discussing whether to withdraw care	Empathetic communication End of life communication skills
Ward Based Simulation (WBS)			
Physical disability due to arthritis and multiple sensory impairments	Ageing simulation suit; OT and Physiotherapy input	Role play using ageing simulation suit; nurses/ HCAs take turns to care for each other as the 'patient'	Empathetic communication, maintaining privacy and dignity, assisting safely with physical tasks
Multi-disciplinary meeting	Simulated meeting room	Simulated MDM with role play; participants take staff roles and perspectives	Communication, effective teamwork
Feeding and nutrition	Part-task trainer; nutrition specialist input	Nasogastric feeding via a part-task trainer; workshop on ensuring a safe eating environment and nutritional assessment;	Selecting appropriate food and fluids, maintaining privacy and dignity, skills practice, haptic feedback using nasogastric feeding, feeding options
Care of the older person	Actor for each exercise	Performing a 12-lead ECG, catheter care, personal care	Appreciating the older patient experience, integrating clinical communication into direct patient care, maintaining privacy and dignity
Care of relatives	Actor for each exercise	Explaining use of crash mats to distressed relative; discuss	Appreciating the relative's experience, effective

		feeding in end-stage dementia	communication with relatives, maintaining privacy and dignity

Evaluation

The evaluation used mixed methods and was designed using the IMTEE to identify key outcome measures. [42] Full ethical approval was obtained for the evaluation. Evaluation data consisted of observations, confidence ratings and interviews. Five observers from the research team rotated to directly observe simulated activities over seven days in total. HPS observations included reviews of video/audio data from scenarios and debriefs. Observations were based on a pro-forma adapted from key literature [46][47] and involved notes on goals and objectives, resources used, participants, activities (role-play; practical tasks; scripted scenarios) and within-session interactions (e.g. emotional responses).

Simulation participants were given pre and post-module questionnaires using a 7-point rating scale to assess self-confidence on key competencies (e.g. '*communicating effectively with colleagues*'; '*identifying the needs of the older patient and their relatives*') with a reliability for nine items of α= .95. All participants were approached for survey on a voluntary basis (Table 2).

Three trained interviewers conducted semi-structured in-depth interviews 7-9 weeks after the course to explore participants' recall of the exercises, retained lessons and reflections on post-course clinical practice. Interviews addressed aspects of the broader training programme, but information about the simulation was specifically elicited and extracted for this analysis. Sampling was purposive and interviewees were stratified to ensure representation across the inter-professional groups (Table 2).

Analysis

Observational data were gathered in note form and written to computer files. [48] Interviews were analysed using thematic techniques [49] using QSR NVivo data analysis software. A selection of eight interviews was independently cross-coded with code lists reaching 92 per cent agreement; minor differences were discussed until consensus was reached. Confidence ratings data were analysed using SPSS v19.0 (IBM, New York).

Participants

Table 2 shows the numbers of participants who attended the training, the number who completed rating scales and the number of interviewees and their professional group.

Table 2 **Number of participants in training and evaluation outcome measures by profession**

Training and outcome measures	Healthcare Assistant	Staff Nurse	Senior Nurse	Doctor	Allied Health Professional	Total
Human Patient Simulation (HPS) training	22	47	15	9	0	93
HPS confidence rating scales	13	31	8	5	0	57 (61%)
Ward Based Simulation (WBS) training	22	44	17	0	3	86
WBS confidence rating scales	18	42	14	0	3	77 (90%)
Follow-up interviews (7-9 weeks after course)	5	11	5	3	3	27

RESULTS

Observational strand

Analysis of fieldwork notes showed that the programme was in general well designed, delivered, facilitated and attended. Participants reported enjoyment of specific scenarios and exercises and were appreciative of the time and effort invested in them. Teaching was interactive and participant-centred with a variety of scenarios, role-play exercises, practical activities and discussions.

HPS

The ability of participants to engage in the HPS simulation scenarios was influenced by a) how the scenario had unfolded and b) the ability of those conducting debriefing to moderate discussions. Facilitating debriefs to elicit cognitive learning was difficult where scenario participants' clinical knowledge or skill had been challenged. Some people felt 'under examination' in terms of their clinical knowledge; others could be wary of being seen to criticise their colleagues. The sessions worked best when scenarios had been handled well by the participants, allowing debrief participants to relax and discussions to focus on points aligned with the learning aims and objectives.

A few key observations can be made about 'best practice' during debrief sessions which can serve as a guide for ongoing work of this nature. Debriefs worked best when:

- the purpose of debriefing was outlined from the outset

- clinical points of interest were dealt with swiftly to enable a focus on the learning objectives

- participants were encouraged to relate events to their own experience

- different voices were encouraged but not to judge or criticize peers

- time was allowed for a summary of key learning points at the end

WBS

Staff comments and reactions throughout the WBS exercises and at summary sessions indicated that the interactive and varied programme 'on-the-ward' helped them to maintain interest and enjoyment. The practical role play exercises allowed peers to construct their own meanings of events as they interacted and discussed the process. Participants said it had been good to get immediate feedback from actors and team members. Key learning points highlighted by debriefing included: how to communicate with relatives (welcome their perspective, gather information, be clear and calm, aim for resolution); being aware of individual differences and preferences in individual patients (treat patients as individuals); and appreciating the impact of ageing (physical, cognitive and social functioning).

Confidence ratings

Figure 1 shows mean confidence (combined for all items) before and after the HPS and WBS scenarios by staff group.

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For HPS (see top panel of Figure 1) there was a broadly uniform baseline confidence score and a significant increase in confidence across all staff grades. There was one outlying score where a mid-grade nurse was lower than the 95th percentile after the course. Overall, mean confidence for all participants before the HPS sessions was 5.1 (SD .9) and mean confidence after was 5.92 (SD .7) which shows a significant increase (t= 9; df = 56; p<.001; 95% CI .63 to1).

For WBS (see lower panel of Figure 1) there was a significant increase in mean confidence ratings for the whole group after the sessions (t= 9.3; df= 76; p<.001; 95% CI .6 to .95). Mean confidence for all participants before the training was 5.2 (SD .88) and mean confidence after was 6 (SD .65). Individual t-tests for each staff group also showed a significant increase in confidence. Three Allied Health Professionals (see Table 2) are not included in Figure 1 due to small numbers, but their mean scores increased from 4.5 to 6 after the course (t = 7.2; df = 2; p<.05; 95% CI .6 to 2.3).

Interviews

Analysis of follow-up interview data showed that learning was centred on the two key themes of teamwork and patient care, including empathetic understanding and communication.

Teamwork

Before the course, there was reported confusion over the roles of nurses and healthcare assistants (HCAs) which could lead to tension between working as a team and fulfilling individual responsibilities. Whilst the majority of participants felt able to raise concerns with senior staff, some said that they usually keep quiet to avoid tension (some had spoken out before and found the experience difficult).

At follow-up, respondents reported that team working was strengthened via a clearer understanding of roles and boundaries and heightened awareness of the impact of their actions on others. Table 3 shows themes which emerged during analysis of teamwork data, illustrated by quotes from participants.

Table 3   Teamwork themes and illustrations

Theme	Issues at baseline/ aims	Characteristic response
Aligning the team	Understanding multi-disciplinary perspectives	*I think like everyone's responsibility, everyone's responsible for patient care, it's not just a nurse or a doctor's job to do it and just to I think appreciate what different … like coming from the OT perspective and the physio's perspective, the role they play in patient care as well, [...] that's what I really picked up on.* (Staff Nurse; 'delirium' scenario) *We had a mock MDM when we all have to play different characters in the MDM setting, to kind of like appreciate other people's roles in the whole grasp of things.* (Staff Nurse; 'MDM' exercise) *So there was a huge amount of empowerment I felt and that subsequently also transcribed into the day to day practice. They are much more part of a team, much more aligned than they were previously.* (Doctor; HPS scenarios)
Managing variable workload	Asking for help	*If you're busy on the ward it's always good to say 'well actually could I have a little more help here please?' and that was what I came away with, not to be frightened to ask for help, not think that I have to do everything myself, that we're a team.* (Staff Nurse; 'busy ward' scenario)
	Utilising all resources	*I can't do everything by myself and that's why I have to be aware of that. [...] of course I can manage it but I have to be very aware that there are also other people there that have skills that are ready to be accessed [...]* (Staff Nurse; 'hospital at night scenario')
Communication between staff	Shared awareness	*[...] it's how quickly the nurse had to react and the communication between the nurse and myself, so everybody had their sort of job as it were to do, and if you didn't have the communication then the person bleeding could have died, or could have got worse. So it is important.* (HCA; 'Lower GI bleed' scenario) *You've got millions of things you're multi-tasking the whole time*

		[…] so it's just a constant communicating and just debriefing every hour or so […] it's just constantly being aware of who is doing what and who's where. (Staff Nurse; 'hospital at night' scenario)
	Assertiveness	*[…] probably maybe trying to be more assertive within the team if there's a problem […]be more ready […] to raise concerns* (Staff Nurse; 'hospital at night' scenario)

Most participants thought the simulated exercises had been beneficial for practising such aspects of team working as calling for help, verbalising concerns and putting across particular points of view. HCAs in particular reported being empowered to raise concerns, communicate confidently and approach colleagues where necessary.

Caring

The main challenge before the course was finding time to communicate effectively with patients. Specific issues inhibiting communication included disagreements caused by the allocation of tasks and the confidence of specific nurses/HCAs in their own communication skills. Table 4 shows themes which emerged during analysis of patient care data, illustrated by quotes from participants.

Table 4   Patient care themes and illustrations

Theme	Issues at baseline/ aims	Characteristic response
Time to care	Spending time with patients and relatives	*[...] like when I'm speaking to maybe the confused patients, I'll be a bit more, give them more time, because sometimes to understand them you have to really give them time [...]* (HCA; 'delirium' exercise) *also there are a couple things with regards to communicating with the relatives [...]I think it's just making time for specific relatives [...] because we're busy but that shouldn't be any excuse [...] I'm very conscious of the relatives at the bedside and that their family are ill and they are very concerned and they want to know what's going on.* (Staff Nurse; 'clinical communication' exercise)
Standing in the patients' shoes	Understanding the specific needs of older people	*[...] putting on the body suits and stuff that was actually really interesting to see it from the patient's point of view. [...] like even when I was sitting down and I knew the chair was behind me I was still reluctant [...] it just limits your mobility.* (Staff Nurse; 'ageing' exercise) *When a patient they can't do nothing, how difficult it is form them, it doesn't mean they don't want to do it but they can't do it, the way their body is it cannot let them do it anymore. So that's why they're asking we have to be more patient, more caring.* (HCA; 'ageing' exercise)
Communicating with patients and relatives	Being professional	*Being honest with them and just keeping them informed, the same with their families, [...] a lot of concerns or anxieties that come in are because people don't know what's going on, [...] So just to keep them informed and be professional in the way you speak to patients, just make sure they're aware of every step in their hospital stay, they know what's going on, so each plan as soon as we hear it we should relay it to them.* (Staff Nurse; 'care of relatives' exercise) *It's a lot of things, okay patient speaking, I did that, helping the*

	Using time with patients to communicate effectively	*patient go to the toilet, like we have to communicate with the patient all the time- putting patient in bed you have to communicate- simple things [...] you're collecting information, yeah?* (HCA; 'care of the older person' exercise)
	Dealing with concerns	*[...] he came to the ward very, very angry [...]I listened to him and everything else, I calmed him down and it was fine and he was so pleasant afterwards and that was exactly how my scenario went, exactly the same, exactly the same.* (Staff Nurse; 'clinical communication' exercise)

Post-course interviewees reflected on spending more time getting to know patients and how this was enhancing the patient experience, and reported perceived clearer communication with patients and relatives and between team members.

Finally, a number of challenges around sustainability were identified at interview. Staff turnover (and use of agency staff) could mean key messages were not sustained. In periods of high workload, the tension between being supportive to the team and performing one's own duties needed to be recognised and managed. Where the programme had encouraged junior staff to be open and challenge others, this needed clear guidance and support to maintain clear lines of supervision, leadership and accountability.

DISCUSSION
This study evaluated whether the aims of an innovative simulation training programme for care teams were fulfilled. Innovative aspects of the study included: the use of simulation to train team working, patient/relative communication and empathetic and sensitive care; a theoretically based evaluation which included follow up interviews 7-9 weeks post-training to investigate transfer

into practice; and the closure of wards to facilitate attendance of clinical teams who work together.

The mixed method evaluation was based on the IMTEE [42] and thus evaluated a range of outcome measures. In summary, the results were that;

1. Learners had strong positive emotional reactions to the course, but reported some anxiety and apprehension about the high fidelity simulation

2. Learners' self-confidence on clinical competencies increased post-training

3. Knowledge for achieving better care was learned and retained at follow up 7-9 weeks post-training

These findings are in accord with previous studies that have identified nurse apprehension about high fidelity simulation [13] [14] and increased post-training self-efficacy amongst nurses exposed to high fidelity simulation. [50]

This study extends those of other studies of simulation in nursing by providing additional evidence that the knowledge acquired was retained at follow up 7-9 weeks post-training and had positive effects on practice. The study shows that the skills required for communication and co-operation can be trained using simulation. NTS training for nurse education can be defined broadly to include team communication, patient interaction and empathy, in addition to traditional conceptualisations which emphasise cognitive skills such as situation awareness and decision making. [21]

Transference and sustaining compassionate care

Staff showed an emotional connection to the learning objectives, and a renewed determination to communicate meaningfully with their patients (these findings are qualitative rather than experimental as tends to be the case elsewhere). [51] This is an important step because high quality communication goes beyond transmission-reception of information and becomes 'real dialogue'. [52] Compassionate care is at the core of the NHS constitution [53] and championed by the Nursing and Midwifery Council and the General Medical Council, yet it has been argued that nursing training has become increasingly academic [54] with a loss of core values such as compassionate care. [55]

In this study, the learning was reported to have had a positive effect on practice at follow up 7-9 weeks post-training, in contrast to some studies which have shown deterioration in nurses' simulation acquired knowledge at around four to eight weeks, [56] four months [57] and six months. [58] However, we also found challenges in maintaining momentum, especially the need for post-programme support from senior staff to maintain changes.

Debriefing and learning

We have reported that HPS debriefing can be challenging when scenarios are perceived to have been clinically problematic (with associated defensiveness about performance) and where junior team members may be wary of implied criticism of colleagues.

Meaningful learning requires the translation of simulated events to personal experience [59] which must be facilitated by those conducting the sessions so that reflection can involve 'honest self-assessment, open communication, and an understanding of how one's actions or decisions led to a particular outcome'. [32 60] Effective debriefing must be robust enough to overcome the fact that

scenarios rarely play out in exactly the same way and debriefs therefore have to allow for different 'interpersonal communications, emotions or points of focus', especially where, as in this case, staff at different levels are involved. [61]

Strengths and Limitations

Inter-professional involvement

A strength of the study was that members of existing teams who provided care on each ward participated in the training together, including doctors, HCAs, nurses and Allied Health Professionals (AHPs). Although inter-professional training is often cited as an aim of simulation for non technical skills, in practice it is usually not practical for an existing team to participate in the training. Commonly, simulation training involves different professionals who don't work together in clinical practice, which clearly presents challenges in forming a shared understanding of team goals and practices. In this study, the involvement of teams who work together had both positive and negative aspects. The fact that experiences and insights were shared during the training potentially contributed to the transfer of these skills into practice. However the existing and ongoing personal relationships between team members may also have inhibited debriefing as participants were sensitive to team members' feelings and the need to maintain good collegiate relationships.

A potential limitation was the lack of involvement of agency staff, students and limited involvement of junior doctors. Effective inter-professional working is likely to be enhanced by the involvement of the widest possible range of team members in training exercises. [62]

Evaluating the programme

The study had a number of methodological strengths, including independent, unbiased evaluators, the use of mixed quantitative and qualitative methods, and follow up at 7-9 weeks post-training. The follow-up interviews, in providing an assessment of the effectiveness of the training from the staff' perspective, effectively extended the debrief period by inviting reflections on learning, the clinical validity of the simulation scenarios and practice, and how the learning has been implemented in practice. This opportunity for reflection allowed nurses to consider simulation outcomes *in light of performance* (rather than simply in light of simulation) and is a way of ensuring that the essential aspects of the clinical setting that shape practice, but are not necessarily represented in the simulation, are taken into account. [63]

Limitations of the methods included the absence of objective measures of performance during and post-training, and the lack of a control group which did not receive the training.

In order to meet the demand of providing safe and high-quality care under tighter regulation of professional standards, the use of simulation training within nursing education will likely be increased [64] [65] and we need innovative ways of evaluating the effectiveness of what is in effect a complex intervention. [66] This might, for example, involve creative use of ethnographic and qualitative methods to investigate in depth the role of simulation in the process of clinical skill acquisition. [34]

CONCLUSION

This paper reports the results of an evaluation to examine the effectiveness of a novel, mixed fidelity, inter-professional simulation training programme. Measures of learners' reactions, post-training self-confidence and transfer of skills into practice showed that the programme had an overall positive effect, with reported improvement in team working and communication and

empathetic and sensitive communication with patients and relatives, providing dignity and privacy in personal care.

Areas to address in future similar programmes include addressing learners' anxiety about simulated tasks, widening inter-professional participation, ensuring post-training support and designing further metrics to show evidence of organizational improvement.

Evaluation of longer term effects of the training is planned.

CONTRIBUTION

HJ conducted the needs assessment and initiated the programme; PJ led the simulation design; SK and BT designed individual scenarios and exercises and facilitated the sessions; RS designed and oversaw aims and objectives for the care of older people; LT and PJ designed and led the debriefs; NK and KT designed interviews and led the qualitative analysis; JA and AR designed and led the evaluation and led the quantitative analysis; AR wrote the first draft of the paper. All contributed to the writing of the final paper.

FUNDING

COMPETING INTERESTS

None

FIGURE CAPTIONS

Figure 1   Mean and range confidence scores before and after training by staff group

REFERENCES

1. Tadd W, Hillman A, Calnan S, Calnan M, Bayer T, Read S. Dignity in Practice: An exploration of the care of older adults in acute NHS Trusts. London, 2011.

2. Oliver D. Doddery but a little too dear? A defence of improving care., 2010.

3. Care Quality Commission. Dignity and nutrition inspection programme: national overview. Newcastle Upon Tyne, 2011.

4. Parliamentary and Health Service Ombudsman. Care and compassion? Report of the Health Service Ombudsman on ten investigations into NHS care of older people. London, 2011.

5. Morris J. Ensuring dignity in the care of older people. *British Medical Journal* 2012:344.

6. Kopp W, Hanson MA. High-Fidelity and Gaming Simulations Enhance Nursing Education in End-of-Life Care. *Clinical Simulation in Nursing* 2011:e1-e6.

7. Thornlow DK, Auerhahn C, Stanley J. A necessity not a luxury: preparing advanced practice nurses to care for older adults. *J Prof Nurs* 2006;22(2):116-22.

8. Palmer MH, Kowlowitz V, Campbell J, Carr C, Dillon R, Durham CF, et al. Using clinical simulations in geriatric nursing continuing education. *Nurs Outlook* 2008;56:159-66.

9. Nazarko L. Treating the Patient or the Labstick? Urinary Infections in Older people. *British Journal of Healthcare Assistants* 2008;2(7):323-26.

10. Durham C, Alden K. Enhancing patient safety in nursing education through patient simulation. *Patient Safety and Quality: An Evidence-Based Handbook for Nurses*, 2008.

11. Wilford A, Doyle TJ. Integrating simulation training into the nursing curriculum. *British Journal Of Nursing* 2006;15(11):604-07.

12. Hyland JR, Hawkins MC. High-fidelity human simulation in nursing education:A review of literature and guide for implementation. *Teaching and Learning in Nursing* 2009;4:14-21.

13. Henrichs B, Rule A, Grady M, Ellis W. Nurse anesthesia students' perceptions of the anesthesia patient simulator: A qualitative study. *AANA* 2002;70(3):219-25.

14. Bremner MN, Aduddell K, Bennett DN, VanGeest JB. The use of human patient simulators: best practices with novice nursing students. . *Nurse Educator* 2006;31(4):170-74.

15. Bearnson CS, Wiker KM. Human patient simulators: a new face in baccalaureate nursing education at Brigham Young University. *J Nurs Educ* 2005;44(9):421-25.

16. Alinier G, Hunt B, Gordon R, Harwood C. Effectiveness of intermediate-fidelity simulation training technology in undergraduate nursing education. *Journal of Advanced Nursing* 2006;54(3):359-69.

17. Brannan J, White A, Bezanson J. Simulator effects on cognitive skills and confidence levels. . *Journal of Nursing Education* 2008;47(11):e495-e500.

18. Babic AL, Crangle ML. Simulation Techniques for Education in Gerontology: An Eexrcise in Experiential Learning. *Educational Gerontology* 1987;13:183-91.

19. Liaw SY, Scherpbier A, Klainin-Yobas P, Rethans JJ. Rescuing A Patient In Deteriorating Situations (RAPIDS): An evaluation tool for assessing simulation performance on clinical deterioration. *Resuscitation* 2011;82:1434-39.

20. Fletcher G, Flin R, McGeorge P, Glavin R, Maran N, Patey R. Anaesthetists' Non-Technical Skills (ANTS): evaluation of a behavioural marker system². *British Journal of Anaesthesia* 2003;90(5):580-88.

21. Flin R, O'Connor P, Crighton M. *Safety at the Sharp End. A Guide to Non Technical Skills*. Aldershot: Ashgate, 2008.

22. Pearson E, McLafferty I. The use of simulation as a learning approach to non-technical skills awareness in final year student nurses. *Nurse Education in Practice* 2011;11(6):399-405.

23. KyrkjebØ JM, BrattebØ G, Smith-StrØm H. Improving patient safety by using interprofessional simulation training in health professional education. *Journal of Interprofessional Care* 2006;20 (5):507-16.

24. Ruth-Sahd LA, Schneider MA, Strouse AMS. Fostering Cultural and Interdisciplinary Awareness With "Low-Tech" Simulation in a Fundamentals Nursing Course to Prepare Student Nurses for Critical Care Clinical Rotations. *Dimensions of Critical Care Nursing* 2011;30(5):263-68.

25. Baker DP, Gustafson S, Beaubien JM, Salas E, Barach P. Medical Team Training Programs in Health Care. In: Henriksen K, Battles JB, Marks ES, Lewis DI, editors. *Advances in Patient Safety: From Research to Implementation*. Rockville, MD: Agency for Healthcare Research and Quality 2004.

26. Mitchell AM, Fioravanti M, Founds S, Hoffmann RL, Libman R. Using Simulation to Bridge Communication and Cultural Barriers in Health Care Encounters: Report of an International Workshop. *Clinical Simulation in Nursing* 2010;6:193-98.

27. Sleeper JA, Thompson C. The use of hi fidelity simulation to enhance nursing students' therapeutic communication skills *International Journal of Nursing Education Scholarship* 2008;5:e1-e12.

28. Yaeger KA, Halamek LP, Coyle M, Murphy A, Anderson J, Boyle K, et al. High-fidelity simulation-based training in neonatal nursing *Advances in Neonatal Care* 2004;4(6):326-31.

29. Wilson M, Shepherd I, Kelly C, Pitzner J. Assessment of a low-fidelity human patient simulator for the acquisition of nursing skills. *Nurse Education Today* 2005;25:56-67.

30. Thiagarajan S. The myths and realities of simulations in performance technology. *Educational Technology* 1998;38(5):35-41.

31. Beaubien JM, Baker DP. The use of simulation for training teamwork skills in health care: how low can you go? *Quality and Safety in Health Care* 2004;13(1):i51-i56.

32. Ruth-Sahd LA. Reflective practice: a critical analysis of data-based studies and implications for nursing education. *J Nurs Educ* 2003;42:488-97.

33. Branch WT, Paranjape A. Feedback and reflection: teaching methods for clinical settings. *Acad Med* 2002;77:1185-88.

34. Ross AJ, Kodate N, Anderson JE, Thomas L, Jaye P. A content analytic mapping of simulation studies in anaesthesia journals, 2001-2010. *British Journal of Anaesthesia* Under Review.

35. Brackenreng J. Issues in reflection and debriefing: How nurse educators structure experiential activities. *Nurse Education in Practice* 2004;4(4):264-70.

36. Cantrell MA. The importance of debriefing in clinical simulations. *Clinical Simulation in Nursing* 2008;4(2):e19-e23.

37. Laschinger S, Medves J, Pulling C, McGraw D, Waytuck B, Harrison M, et al. Effectiveness of simulation on health profession students' knowledge, skills, confidence and satisfaction. *International Journal of Evidence-Based Healthcare* 2008;6(3):278-302.

38. Levett-Jones T, Lapkin S, Hoffman K, Arthur C, Roche J. Examining the impact of high and medium fidelity simulation experiences on nursing students' knowledge acquisition. *Nurse Education in Practice* 2011;11:380-83.

39. Murin S, Stollenwerk NS. Simulation in procedural training. *Chest* 2010;137(5):1009-11.

40. Elfrink VL, Kirkpatrick B, Nininger J, Schubert C. Using learning outcomes to inform teaching practices in human patient simulation. *Nursing Education Perspectives* 2010;31(2):e97-e100.

41. McGaghie WC, Draycott TJ, Dunn WF, Lopez CM, Stefanidis D. Evaluating the Impact of Simulation on Translational Patient Outcomes. *Simulation in Healthcare* 2011;6(7):S42-S47 10.1097/SIH.0b013e318222fde9.

42. Alvarez K, Salas E, Garofano CM. An integrated model of training evaluation and effectiveness. *Human Resource Development Review* 2004;3(4):385-416.

43. Steinwachs B. How to facilitate a debriefing. *Simulation & Gaming* 1992;23(2):186-92.

44. Dieckmann P, Molin FS, Lippert A, Ostergaard D. The art and science of debriefing in simulation: Ideal and practice. *Med Teach* 2009;31(7):287-94.

45. Fanning RM, Gaba DM. The role of debriefing in simulation-based learning. *Simul Healthc* 2007;2:115-24.

46. Spradley JP. *Participant Observation*. New York: Holt, Rinehart and Winston, 1980.

47. Flanders N. *Analyzing teaching Behavior*. New York: Wiley, 1970.

48. Baker TL. *Doing Social Research*. New York. : McGraw Hill Book Co., 1988.

49. Braun V, Clarke V. Using thematic analysis in psychology. *Qualitative Research in Psychology* 2006;3(2):77-101.

50. Schoening AM, Sittner BJ, Todd MJ. Simulated clinical experience: nursing students' perceptions and the educators' role. *Nurse Educator* 2006;31:253-58.

51. Solnick A, Weiss S. High Fidelity Simulation in Nursing Education: A Review of the Literature. *Clinical Simulation in Nursing Education* 2007;3:e41-e45.

52. Firth-Cozens J, Cornwell J. The Point of Care: Enabling compassionate care in acute hospital settings The Kings Fund 2009.

53. Department of Health. The NHS Constitution: the NHS belongs to us all. London: Department of Health, 2009.

54. Hudson R. Do unto others. *Nursing Standard* 2008;23:20-21.

55. Wear D, Zarconi J. Can compassion be taught? Let's ask our students. *Journal of General Internal Medicine* 2008;23:948-53.

56. Bruce SA, Scherer YK, Curran CC, Urschel DM, Erdley S, Ball LS. A collaborative exercise between graduate and undergraduate nursing students. *Nursing Education Perspectives* 2009;12(3):22-27.

57. Kinney S, Henderson D. Comparison of low fidelity simulation learning strategy with traditional lecture. *Clinical Simulation in Nursing* 2008;4(2):e15-e18.

58. Kardong-Edgren S, Lungstrom N, Bendel B. VitalSim versus SimMan:a comparison of BSN student test scores, knowledge retention and satisfaction. *Clinical Simulation in Nursing* 2009;5:e105-e11.

59. McDonnell LK, Jobe KK, Dismukes RK. Facilitating LOS debriefings: a training manual, 2010.

60. Mayville ML. Debriefing: The Essential Step in Simulation *Newborn and Infant Nursing Reviews* 2011;11(1):35-39.

61. Littlewood KE. High fidelity simulation as a research tool. *Best Practice & Research Clinical Anaesthesiology* 2011;25:473-87.

62. Deering S, Johnston LC, Colacchio K. Multidisciplinary Teamwork and Communication Training. *Semin Perinatol* 2011;35:89-96.

63. Santos MC, Leite MCL. A avaliação das aprendizagens na prática da simulação em enfermagem como feedback de ensino. *Revista Gaúcha de Enfermagem* 2010;31(3):552-55.

64. Aggarwal R, Mytton OT, Derbrew M, Hananel D, Heydenburg M, Issenberg B, et al. Training and simulation for patient safety. *Quality and Safety in Health Care* 2010;19(Suppl 2):i34-i43.

65. World Health Organization. Global Standards for the Initial Education of Professional Nurses and Midwives. Geneva: WHO, 2009.

66. Campbell NC, Murray E, Darbyshire J, Emery J, Farmer A, Griffiths F, et al. Designing and evaluating complex interventions to improve health care. *BMJ* 2007;334(7591):455-59.