Clinical simulation in maternity (CSiM): interprofessional learning through simulation team training

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ABSTRACT

Background Focusing on interprofessional relations in team performance to improve patient safety is an emerging priority in obstetrics. A review of the literature found little information on roles and teamwork in obstetric emergency training. Qualitative research was undertaken through a Clinical Simulation in Maternity programme which gives interprofessional rural clinicians the opportunity to learn collaboratively through simulated obstetric emergencies. This research aimed to determine how interprofessional simulation team training improved maternity emergency care and team performance.

Method This research used thematic inductive analysis using data from in-depth interviews. In total 17 participants and four facilitators who took part in the Clinical Simulation in Maternity workshops were invited to participate in an interview 1–2 weeks postworkshop and then again 3–6 months later. Data were deidentified then coded manually and with the assistance of computer program NVivo 7 (QSR International).

Findings Of the major themes identified, *Collaboration in Teambuilding* was separated into four subthemes (Personal Role Awareness, Interpositional Knowledge, Mutuality and Leadership).

Conclusion This research highlights the significance of interprofessional training, particularly through simulation learning in a team where rural clinicians are able to learn more about each other and gain role clarity, leadership skills and mutuality in a safe environment.

INTRODUCTION

'Simulation team training' and 'mock emergency drills' are now recognised as important teaching and learning tools to improve and practise clinical skills in healthcare. A team approach to training is recommended to improve reliability and safety, and reduce medical errors.[1 2] Human patient simulators enable emergency training in the fields of anaesthesia, intensive care, emergency departments and neonatology through a 'system view' to better manage errors and events. Some simulators are now being adopted for training in emergency obstetrics.[3] Emergency training which incorporates teamwork, communication and crisis resource management can improve performance, reduce stress and transform to better patient outcomes.[4] Interprofessional interactions in a team setting can assist with the construction of one's own professional identity through interactions which take place between different disciplines[5] and allow professionals to see their similarities and yet know their differences.[6] Clinical simulation team training therefore, may have the potential to positively impact on professional roles and attitudes.

There is an abundance of literature supporting team management training; however, there is little information or research on team composition and team roles in an obstetric emergency. The purpose of this study was to determine how interprofessional simulation team training improved maternity emergency care and team performance, from the perspective of the midwives, nurses and medical practitioners involved in rural practice as well as the workshop facilitators.

METHODS

Simulation training

Clinical Simulation in Maternity workshops are held at the Flinders University Rural Clinical School in the Riverland region of South Australia. The workshops give rural clinicians the opportunity to practise skills based on the most likely, although seen infrequently, emergency scenarios that rural practitioners may come across in the maternity setting. Each team consists of one or two medical practitioner obstetricians, two midwives and one nurse from the same rural hospital. The workshops consist of Simulation learning principles, Crisis Resource Management principles, obstetric emergency education, skill trainer stations and simulation scenarios which are videotaped and followed by debriefing sessions, using video playback by experienced clinical educators. The most integral component of the simulation training are the debriefing sessions, which focused on process rather than outcome, and the integration of the video playback into the debriefing, which allowed team members to explore attitudes, roles and responsibilities.[4]

Study

This project was approved by the Social and Behavioural Research Ethics Committee at Flinders University. In total 17 participants and four facilitators who took part in the Clinical Simulation in Maternity workshops were invited to participate in the research study following training which took place in November 2006 and March 2007. Four clinical facilitators, five medical practitioner obstetricians, eight midwives and three nurses consented to be interviewed face to face on two separate occasions. One nurse declined. One midwife declined the second interview. The first semistructured interview took place within 1–2 weeks postworkshop, and the second semistructured interview 3–6 months later. All interviews were videotaped and then transcribed by the researchers verbatim.

The individual interviews were undertaken in the venue of choice nominated by the participants which, for most, was in their place of work and in one case the midwife's own home. Researchers wanted participants to feel comfortable and speak freely without intimidation. The interviewer was a facilitator of the workshop as well as a researcher in the study (LG). A semi-structured interview schedule was used as a guide so that participants were asked similar questions. There was an opportunity to prompt or explore further each question (see appendix 1).

Data analysis

The research uses a thematic inductive approach where the analysis is data driven, which means the themes identified by the researchers are strongly linked to the data.[7] Data in the form of deidentified and anonymous scripts from the interviews, using pseudonyms, were initially coded manually, and further stages of coding were assisted with the use of computer software program Nvivo 7.[8] Stage one analysis was carried out independently by two researchers (LG, KD) to avoid bias. In stage 2 of the analysis the researchers together reviewed, defined and named the themes until saturation and consensus were achieved. All findings were related back to the research objectives. Trustworthiness is the process that qualitative research uses to ensure rigour during the data collection and analysis.[9] This was achieved by keeping detailed records, two researchers coding and analysing the data independently and 'participant checking,' whereby the participants check the accuracy of the researchers' interpretations. All participants confirmed the validity of the findings and were satisfied with all themes and interpretations.

FINDINGS

Of the three major themes identified (see figure 1), Collaboration in Teambuilding will be discussed in this paper, separated into four subthemes; Personal Role Awareness, Interpositional Knowledge, Mutuality and Leadership (see figure 2). The other two themes Clinical Practice Outcomes and Clinical Simulation as a Learning Tool will be discussed in a separate paper so they can be discussed at length.

Collaboration in teambuilding

Personal role awareness

Simulation team training resulted in the participants describing how they became more aware of their roles in an emergency situation. The participants reported an increase in personal role awareness, which included role definition, scope of practice and communicating roles. Scope of practice within the team includes the tasks and functions, and relative position within a team each member undertakes. Midwife Tara reported, '…it [STT] made you think of what your responsibilities were in that role.' Nurse Haylee stated that she now had better understanding of her role and of what she is 'capable and able to do in that situation.' Midwife Alice describes her experience:

> When the second midwife came in, I did kind of direct but I didn't define roles for the other three of us. We kind of had roles and kind of slotted into them but perhaps roles were not defined.

Midwife Alice reflected on this again in her second interview:

> I suppose from that day being mindful that if you have got others in there with you that everyone knows what their role is, making sure everyone knows what their role is or inviting them to have that role.

Midwife Alice perceived the importance of communicating roles and the need to have assigned roles in an emergency. The nurses and midwives were able to reflect on their scope of practice and clarify their responsibilities and capabilities.

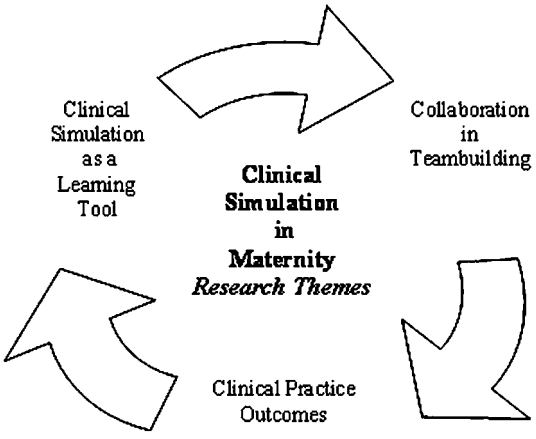

Figure 1 Major themes of clinical simulation in maternity training.

Interpositional knowledge

The simulation team training assisted members of the team to learn more about each other which increased their confidence in each other. This is explained in the literature as 'interpositional knowledge' and is defined as the knowledge each team member possesses of the roles, responsibilities and information needs of other team members during a situational task.[10]

Dr Patrick explained how the opportunity to learn together has an impact, 'Just getting together at our table and talking about these things makes us more aware of some of our limitations or opportunities…' Dr Mark explained the advantage of being able to practise skills together:

> … you see things from their [nurses/midwives] point of view, perspective and training…so I think it is better, not only in labour ward but also in casualty. I think that it has improved things because when I look at things now in an emergency, when I ask the nurse to do something, I know that she can only do so much with her capabilities. I think doing the clinical simulation you actually see what occurs and what the limitations are and what they [nurses/midwives] can and can't do.

Dr Mark was able to apply the interpositional knowledge gained through simulation team training and transfer this to other team environments. All the participants perceived an increase in their own level of interpositional knowledge, that is, an increase in their understanding of each others roles and what might be expected of each other in an emergency situation.

Mutuality

Each health professional team relies and benefits from each other in teamwork, and professional relationships require openness, trust, integrity and mutuality which impacts on the quality of care delivered.[11–13] Working together leads to some interdependence,[11] which can be defined as having some mutual responsibility towards other team members. With teamwork, if a degree of mutuality is present, then mutualism, which is about fostering symbiotic relationships, can also take place. Dr Patrick commented

> …you have shared this experience together and you've laughed about it together and you've talked about it afterwards and so it certainly creates a relationship, reinforces a relationship which is bigger than just working as a team in an emergency situation…

Midwife Tara explains how working with the same doctor as she performed with in the scenario increased her comfort level when working together;

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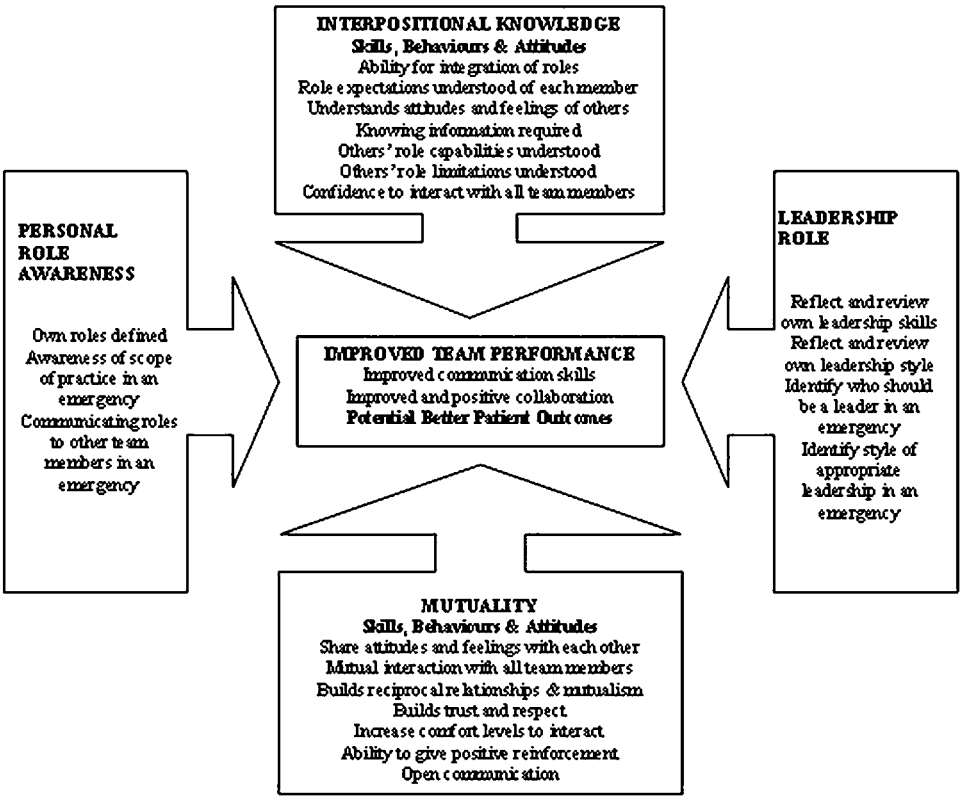

Figure 2 Collaboration in teambuilding model to improve team performance.

> It was good to actually meet them [the medical practitioners] in a fun environment and then I had a delivery with one of them yesterday and I just felt a lot more comfortable now that I had the day [STT] with him and did that scenario with him.

The simulation team training gave participants the opportunity to have a commonality of purpose (the good of the patient) which promoted mutual respect. Dr Scott reveals

> I think that those people that were there now realise that we all have got our deficiencies in us, and just accept that, for the goodness of the patient.

Mutuality gained through simulation team training promotes an opportunity to build reciprocal and symbiotic relationships between health professionals which made their interactions easier through a commonality purpose.

Leadership

Simulation team training assisted the participants in reflecting on and appraising their leadership skills and reviewing the role of leadership in an emergency. Dr James discussed where he felt he needed improvement:

> The things that we talked about in the debrief, the more clear stating of who the leader is and I think I could have provided better and more direct leadership…

During the interviews, most participants felt that leadership roles could be undertaken either by the midwife or the general practitioner. Dr Mark reported:

> The leader may not necessarily be the doctor, it can still be the midwife who has been with the mother all that time, but it is important that you just have the one person who is the leader who can give instructions…

Both the midwives and the medical practitioners' comments were in agreement with the belief that the leadership role can change. Midwife Alice reported that next time she finds herself in an emergency, it will be important to '…make sure that whoever is in charge knows that they are and that it's okay for the person in charge to change.' CRM training encourages the leadership to be handed over during the scenarios as considered necessary, which encouraged the participants to reflect and think about this process. Participants were able to appraise their own leadership skills and reflect on the importance of identifying who is the leader and where this role fell within their own and others' scope of practice in terms of how the role of leadership is managed in an emergency setting.

DISCUSSION

The theme of collaboration in teambuilding is an exploration of the behaviours and attitudes of health professionals undertaking team training. Most of the participants' reflections during the interviews have drawn on the debriefing sessions where participant experiences turn into learning.[14] Bleakley refers to this type of reflection as a 'team's conversational rememberings' where learning occurs through social participation.[15] The midwives, nurses and medical practitioners in this study were able to clarify and reflect on their own personal roles in an emergency. Simulation team training reinforced the importance of everyone taking on a role and communicating these roles in an emergency. Having an awareness of the competency level of the team and having specific tasks creates confidence and stability within a team.[16] Other studies have also found interprofessional clinical simulation activities reinforce professional orientation and reduce role confusion and ambiguity.[6] There is a need for horizontal learning across teams and emphasising the importance of 'boundary crossings' between different professionals who share a common interest.[15 17] Therefore, shaping practice through team collaboration can inform safe clinical practice.[15]

It is argued that no 'single' teamwork training course can alter attitudes, and change in work culture can only be achieved

through repetitive training.[18] Although the benefit of teamwork training in managing simulated obstetric emergencies has been questioned,[19] this research strengthens the evidence that a 1-day simulation team training course can increase participants' confidence and ease of interacting with each other.[20] It is important to determine whether this positive collaboration is transferable to the clinical environment,[6 20] and this research demonstrates that many participants were still thinking and reflecting about their role/s in an emergency 3–6 months following the simulation team training.

Medical practitioners, who actively solicit nursing input into patient care as well as positively reinforce their contributions, create an environment of equality and openness.[21] Mutuality can be acquired through simulation team training. Positive team interactions and symbiotic relationships can lead to improved communication which promotes better patient outcomes.[6 21–24]

Simulation team training gives participants the opportunity to establish where a leadership role fits in to each profession's scope of practice. Medical practitioners and midwives in the study agreed they should consult each other about who will take on the role requirements of the leader rather than assume the medical practitioner is the only one to take on the leadership role. Participants concluded that the leadership role was interchangeable during an emergency. This strengthening of leadership contributes to the flattening of the apex of the hierarchy pyramid and the widening of its base, which ultimately improves team performance.[25] The leadership role is a dynamic process where the more a team understands its purpose and members, the more the individuals are able to share the power.[26]

Limitations

This research employed a qualitative approach to seek experiences from the rural clinicians who participated in this study. The research did not intend to seek generalisability, and the findings represent the participants perceptions. While the simulation team training was undertaken in the area of obstetrics, the participants were able to reflect on other types of emergencies in the rural hospital setting during their interviews; thus, findings may be applicable to teamwork in any clinical emergency. The interviewer (LG) was known by some of the participants and was a facilitator of the workshop which may have influenced responses. The role of researcher 1 (LG) in the analysis could be viewed as a limitation; however, researcher 2 (KD) was not involved in the workshops and this assisted in reducing any bias during the interpretation of the data.

Implications

Qualitative findings, Personal Role Awareness, Interpositional Knowledge, Mutuality and Leadership all impact upon teamwork performance. Participants gained a deeper insight into the value of interprofessional learning by reflecting on their own knowledge, skills and attitudes in clinical practice.

Clinical team leadership training is lacking,[13] and it is being recognised that medical schools should offer leadership courses for students.[27] Further research could explore whether the scope of practice of each profession encourages them to understand the value of effective teamwork and leadership when providing emergency care. Longitudinal studies are needed to explore the long-term benefits of simulation team training.

CONCLUSION

Simulation learning enhances reflective ability,[4 28 29] and this research demonstrates how team training influenced participants to review their teamwork skills, behaviours and attitudes. This research highlights the significance of interprofessional training, particularly through simulation learning in a team where rural clinicians are able to learn more about each other, gain role clarity and mutuality in a safe environment. Learning clinical skills in teams through simulation brings with it the added dimension of building reciprocal relationships and enhances interprofessional collaboration.

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Competing interests None.

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APPENDIX 1: INTERVIEW SCHEDULE

Interview 1

a. What is your previous experience of clinical simulation?
b. How do you feel about your experience of clinical simulation?
c. What would you say are the positive outcomes from your clinical simulation experience?
d. Did you find anything negative about the experience?
e. What impact did the environment have on your performance in the scenario?
f. Do you remember what you decided you might do differently as a result of the clinical simulation exercises?
g. Have you had the opportunity to reflect on this or do anything about it at this point?
h. Have you since thought of anything else that you might change in your or about your practice since the clinical simulation workshop?
i. How did you find the debriefing session?
j. Do you think clinical simulation has the potential to make you a more reflective practitioner? (If so, in what way?)
k. How did you find undertaking the clinical simulation with people that you normally work with?
l. How do you think your clinical simulation experience has made any difference to your relationships with people you work with 1) with those in your team at the workshop 2) with others in the workplace?
m. Do you feel you have a greater understanding of the role of teamwork in your practice — both in dealing with emergencies and your day to day work? (How?)
n. Anything important you would like to add about the use of clinical simulation training in rural practice that you would like to add?

Interview 2

a. Have you had any opportunity to reflect on your recent experience of clinical simulation, if so could you tell me about it?
b. How do you think the experience of clinical simulation has affected your practice?
c. In what ways has the experience of simulation influenced your teamwork?
d. Do you think the experience has made you think any differently or changed anything re your working relationships?
e. Did you have the opportunity to share the information from the workshop and how did you do this? What type of response did you get?
f. Thinking back to the workshop what remained most vivid in your mind and stayed with you from the workshop and why?
g. Take yourself back to the debriefing experience; about what was discussed constructively about your role - have you had an opportunity to apply any of these comments to your practice?
h. Do you think your work colleagues see you differently as a result of attending the simulation workshop?
i. Have you had the opportunity for any debriefing or reflection in your practice, since the workshop?
j. If you came back to another workshop, what would you like to achieve this time?
k. Do you think you would feel any different the second time?
l. How would feel, if you were participating with a team you did not know, say with a team from a different hospital?
m. What advice would you give somebody you knew would be attending a simulation workshop?