The benefits of debriefing as formative feedback in nurse education

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KEY WORDS

Debrief, formative feedback, formative evaluation, nurse education, teaching and learning methods

ABSTRACT

Objective

This paper explores the nursing literature to identify the educative process and essential features of debriefing.

Setting

Nursing education settings: undergraduate, postgraduate and professional development in nursing and midwifery.

Data sources

Studies of debriefing in nurse education were located in peer reviewed journals between 1990 and May 2010. Searches were made using keywords in six healthcare and one education database. Eleven nursing studies reporting education of individuals and six studies of teams were selected for inclusion; only one study provided learning outcome data. Hence, the literature was synthesised in a narrative form to include related studies.

Primary argument

Formative feedback is important in experiential learning and is often applied in nursing in the form of facilitated structured debriefing. Debriefing is most commonly reported in relation to clinical skills development and as part of individual and team-based simulation training. Educational outcomes are dependent upon the skills of the facilitator in offering feedback in accordance with best practice. Although a key component of higher level education, there is a lack of published evidence with regard to the effectiveness of debriefing techniques in nurse education. A framework for debriefing practice is presented.

Conclusion

Structured facilitated debriefing is an important strategy to engage students in learning and is essential in simulation training. Further research is warranted to fully understand the impact of the method in nurse education.

INTRODUCTION

The 'debrief' is a common form of retrospective analysis of critical incidents in nursing and the health professions (Ireland et al 2008), but its potential for nurse education has not been fully recognised.

Debriefing has been described as a critical incident stress-reduction technique that includes structured stages of group discussion (Mitchell 1983). However, studies including a Cochrane review, have failed to agree on the overall value of the technique for traumatic stress reduction - although there may be some benefits (Rose et al 2002; van Emmerik et al 2002).

Studies also report brief-and-debrief techniques may enhance skills and improve the quality of patient care (Salas et al 2005). Debriefing is therefore an important strategy for teaching and learning in health care. It enhances learning opportunities and enables students to learn from their mistakes (Fanning and Gaba 2007). Didactic approaches to clinical education without debriefing approaches are unlikely to adequately prepare students for clinical practise because of a need to combine core knowledge with clinical skill (Tiwari 2005; Buykx 2011).

In recent years there has been a focus on experiential learning strategies that include debriefing techniques for this educative potential (Parker and Myrick 2010; Loyd and Koenig 2008; Agency for Healthcare Research and Quality 2000). Such techniques have become known as *performance* debriefing. There is a paucity of studies on the effectiveness of the method for teaching and learning.

Educational Theory

Individuals differ in their preferred learning style, requiring varied educational approaches with indications that exposure to familiar and unfamiliar teaching techniques will develop learning (Vaughn and Baker 2001). Different modalities and learning preferences have been described in adult education such as visual, visual/ verbal, physical (kinaesthetic) and auditory reception (Neuhauser 2002). In addition, both formative and summative assessments enhance learning outcomes; either as a trigger for learning, or from assessment reflection and feedback (Boud and Falchikov 2006). However, assessment tasks should not be limited to 'surface' learning approaches such as the recall of facts, but should include deeper approaches that apply learning in the clinical or clinically simulated context (Tiwari et al 2005).

Learning generally takes place through a 'reception learning' process when "new meanings are obtained by asking questions and getting clarifications of old concepts and propositions and new concepts and propositions,

heavily mediated through language" (Novak 2006: p3). This learning process has been described as an 'experiential learning cycle' of four stages by Kolb (1984) (figure 1). First, the learner has a concrete experience, followed by a reflective period to add meaning and perspective. Thirdly, abstract conceptualisations help develop understanding of actions and reactions in the light of previous knowledge. Lastly, the learner applies what has been learned to real situations and experiments with the knowledge. For example, a nurse may learn about the side effects of a prescribed drug through experiencing a patient's collapse; reflecting on the



Figure 1: Kolb's experiential learning cycle

incident and assimilating the learning into work behaviours in the future.

The experiential learning cycle can be applied to numerous learning situations in health care.

Debriefing for reflection

There is no universally recognised definition of debriefing for learning, broadly considered to be a facilitator - or peer - led discussion of events. This includes reflection and assimilation of activities into a learner's cognition that aims to produce long-lasting learning (Fanning and Gaba 2007). Debriefing requires a two way communication process between student and teacher. The process is not just feedback on performance but a communication process that draws out performance explanations and enables students to develop strategies to enhance future performance. Well constructed debriefings lead to positive reflective outcomes (Byykx et al 2011). Debriefing is particularly important following formative assessment, as the opportunity to improve performance prior to summative assessment remains. It can assist reflective activity in the second phase of Kolb's cycle. For example, by reflecting on performance, structured debriefing sessions will highlight progress (Shute 2007).

Although formative feedback is regarded as critical for learning in higher education (Quality Assurance Agency for Higher Education 2006), there is no clear best practice route and many approaches have been adopted with a variety of outcomes (Shute 2007). Processes of debriefing include oral feedback following observation of skills (Tiwari 2005) for example after Objective Structured Clinical Evaluations (OSCE) (Rentschler et al 2007), replay of videoed skills performance (Minardi and Ritter 1999) and in on-line assessments of quizzes and reflective reports (Richardson 1995). Debriefs may be facilitated by teachers, learner groups, peers, or through self-assessment, with a variety of effects (Perera et al 2008; Crowe and O'Malley 2006; Glynn et al 2006; Hargreaves 2004).

Aim

This paper aims to critically explore the contemporary literature on debriefing as an educative method and to answer the questions:

- i. In what fields of nursing education is debriefing being utilised for learning?
- ii. What effect does debriefing have on learning?
- iii. What are the features of debriefing that are indicative of best practice?

Searches were made of electronic databases for publications in peer reviewed journals in English between 2000 and May 2010. The databases included Medline Ovid, ProQuest, Cinahl Plus, Psychlnfo, PubMed and ERIC. Multiple searches were conducted using strategies appropriate for each database, with combinations of keywords that included: debrief, learning, formative feedback, formative assessment, facilitated feedback, experiential learning and nursing. Research reports involving pre-registration and professional level (post-graduate) continuing education in nursing were included, with a focus on debriefing for clinical outcomes. Quantitative and qualitative designs that reported studies of debriefing educational approach or effect (such as pre-test and post-test survey) were included. Primary and secondary studies (such as a review) were eligible. Studies of debriefing for administrative management purposes were excluded owing to the stated focus on clinical learning.

Study	Design and sample	Assessment and analysis	Outcome
Birch et al 2007 (UK)	Randomised controlled trial using simulation with debrief in team training of hospital obstetric staff (n=36:6 teams of 6- medical/ midwives).	Evaluated knowledge, team performance pre-post training and after three months by survey; simulation measure included debrief.	Trend towards performance improvement with simulation and debrief with inadequate sample to reach significance.
Bambini et al 2009 (USA)	Quasi-experimental repeated measures survey of bacclaureate nursing students' simulation training with debrief for post-partum care (n=112).	Self-reports of confidence and self-efficacy to perform post partum nursing tasks analysed by <i>t</i> -tests.	Students' reports indicated a significant increase in each of the skills after a simulation training session with debrief although no separate data was collected on debriefing.

Table 1: Included studies and their outcome

Table 1: Included studies and their outcome, continued...

Study	Design and sample	Assessment and analysis	Outcome
Brown and Chronister 2009 (USA)	Quasi-experimental case-control study using simulation versus usual education in an electro-cardiogram course with nursing students (n=140).	Self-reported critical thinking and confidence scales.	Critical thinking and confidence scores were significantly higher after simulation education with debriefing.
Bryans 2004 (UK)	Quasi-experimental multi-method study to examine client consultation practice of registered nurse community health visitors (n=15).	Simulation/debrief, interview and observation with no details of analysis given.	Multi-methods including simulated interviews with debriefing were useful for evaluating nurses' communication and health visiting practice.
Chen et al 2007 (Canada)	Quasi-experimental post-test qualitative/quantitative surveys after high fidelity simulation training with debrief, of paediatric ICU team to implement new equipment (n=27).	Post- simulation with debrief, a group debriefing interview was used to examine team response to new equipment (a paediatric resuscitation cart system) and self-reported survey of end users used to assess satisfaction.	High-fidelity simulation is effective in introducing new equipment systems in the PICU by facilitating application for the end-user.
Cziraki et al 2008 (Canada)	Quasi-experimental post-test: quantitative and qualitative survey to improve hospital Rapid Response Team functioning, especially communication (n=29: medical/nursing).	Communication skills training with multiple educational strategies including simulation and feedback was assessed via self-reported survey (no separate assessment of debriefing) and ward staff feedback.	Self-rated evaluations report positive team communication training outcomes and ward staff (users) report communication improvement after training.
Dine et al 2008 (USA)	Experimental prospective randomised trial to assess CPR training using simulation with verbal debriefing versus simulation with automated feedback from equipment, in registered nurses (n=65).	Change in CPR performance quality was objectively assessed in repeat simulations.	Verbal debriefing showed greatest improvements in performance of CPR depth and rate (36%; p=.005) compared to automated feedback from machines.
Hogg 2009 (UK)	Quasi-experimental post-test evaluation of a scenario for simulation education for registered nurses for safe blood transfusion practice (n=6).	Qualitative evaluation via focus group and by survey questionnaire.	Simulation with debrief was effective for teaching safe transfusion practice in a non-threatening realistic workplace environment.
Kuiper et al 2008 (USA)	Quasi-experimental prospective evaluation of clinical training plus simulation with debriefing in pre-registration senior nursing students (n=44).	Exploration of Outcome Present State (OPT) Model worksheets use by students for recording a clinical case & then student survey of reflection after simulation with debrief.	Descriptive findings support use of OPT and simulation with debriefing by staff for enhancing students' didactic learning.
Mikkelsen et al 2008 (Norway)	Quasi-experimental qualitative evaluation of 21 second year nursing students' perception of teaching technique for infection control skills: scenario-based study groups with and without teacher and simulation training.	Three student focus groups.	Scenario-based simulation training with teacher feedback via debrief was preferred.
Norris 2008 (UK)	Quasi-experimental post-test cross-sectional survey of obstetric emergency training for student midwives in groups of 6 (n=23).	Self-report survey of one-day training course without validated instrument; Descriptive analyses (details of methods not provided).	Simulation enabled students to put theory into practice and to practice in a safe environment.
Papaspyros et al 2010 (UK)	Post-test: quantitative survey (chart audit: n=115) and staff interviews (multi-professional cardiac theatre team) (n=15) re brief and de-brief theatre system.	Descriptive analyses (methods not given) for problematic and non-problematic theatre cases and counting of adjectives in staff interviews.	Staff were positive about briefing/ debriefing process and its contribution to patient safety.

Table 1: Included studies and their outcome, continued...

Study	Design and sample	Assessment and analysis	Outcome
Rosenzweig et al 2008 (USA)	Quasi-experimental pre-test post-test survey of acute care nurse practitioner students after a communications skills course (for difficult communications) with simulation and structured debrief.	Students' self- reported confidence and perceived skill: before, after and after a further four months using a written survey; analysed by non-parametric statistics.	Students' perceived confidence and perceived skill improved significantly both immediately and after four months (all: P<0.001) although no separate data was given for effect of debriefing.
Scherer et al 2007 (USA)	Experimental pre-test post-test controlled intervention using simulation with debrief versus clinical seminar for registered nurse- practitioner students (n=23).	Self-reports of cardiac care knowledge, confidence, teaching quality were collected via survey.	Simulation with debriefing had similar outcomes to the control group- with no data on debriefing as a separate variable.
Weinstock et al 2005 (USA)	Descriptive post-test survey of critical incident training for hospital paediatric medical/ nursing staff with simulation education incorporating debriefing techniques.	Self-reported survey of value of education for paediatric emergencies.	An in-hospital simulation suite was able to offer regular team and individual training to the nursing/ medical workforce that was regarded positively by participants and was cost-effective.
Wisborg et al 2006 (Norway)	Quasi-experimental pre-post test (survey) of hospital Trauma Teams (registered nurses, physicians) (n=1237).	Questionnaires before/after a two-simulation team training course (simulation plus structured debriefing). Comparative statistics were given.	Positive learning was self-reported, especially from nurses: n=793 nurses reported significantly higher met expectations of training, compared with physicians and others.

RESULTS

Examination of title and abstract of 101 papers located in the search resulted in 17 nursing papers being selected for inclusion (table 1). The remainder were either non nursing studies, reported curriculum development, other types of formative assessment, or were reports. Of the selected studies, debriefing was an *element* of teaching that was not assessed independently, except for one study that provided debriefing education outcome data (Dine et al 2008). Consequently, there was a lack of information about the effect of debriefing on learning. Six of the nursing papers reported team-based studies (listed in table 2) and described research that *included* debriefing approaches, such as evaluation of a simulation training day. Eleven nursing studies (listed in table 3) reported on education of individuals using strategies that included debriefing. Given the scarcity of evidence about impact of debriefing, in order to answer the research questions the literature was synthesized in a narrative form with a focus on debriefing practices. Additional evidence from research in other professions (eg. medicine) was included to inform responses to the research questions.

Debriefing of teams

Debriefing has been incorporated into teaching techniques to develop the knowledge, skills and attitudes of various work groups, including nurses (Papaspyros et al 2010; Cziraki et al 2008; Birch et al 2007; Chen et al 2007; Wisborg et al 2006; Weinstock et al 2005) and a range of other medical professionals (table 2). It can be used for training as a professional development tool and as debriefing following a critical incident (Papaspyros et al 2010). Examples of team work groups and debriefing context are given in table 2.

Study	Work group	Topic focus
Birch et al 2007	Hospital obstetric staff: midwives, medical staff	Obstetric emergency drills using simulation and debrief
Chen et al 2007	Paediatric ICU staff: medical and nursing	High-fidelity simulation training and debrief to implement new equipment (a paediatric resuscitation cart system)
Cziraki et al 2008	Hospital Rapid Response Team: team leads, medical and nursing professionals	Communication skills training using simulation to improve team function
Papaspyros et al 2010	Cardiac Theatre Team: surgeons, nurses, anaesthetists, theatre assistants	Routine brief-debrief: techniques to enhance patient safety
Weinstock et al 2005	Hospital Paediatric Staff: critical care fellows, nurses, respiratory therapists, paediatric house staff	Hospital-based paediatric staff education for paediatric emergency simulations incorporating debriefing techniques
Wisborg et al 2006	Hospital Trauma Teams: registered nurses and physicians	Trauma team training with structured debriefing following hospital based simulation

Table 2: Team debriefing in healthcare teams

The medical team debriefing literature tends to focus on high risk environments such as operating theatres (Papaspyros et al 2010), emergency department trauma teams (Wisborg et al 2006; Weinstock et al 2005) and intensive care or medical emergency teams (Cziraki 2008; Birch et al 2007). Debriefing was commonly employed during the training of teams using mannequin-based simulation techniques or partial task trainers that enable repeated practice without risk to patients (Decker et al 2008). Such processes may enable development of skills and knowledge (Lambert and Glacken 2005) and will be paramount in feedback to emergency teams when combined with formal ratings scales (Cooper et al 2010a). Each of the six studies in table 2 reported positive learning outcomes for simulation training that incorporated various feedback and debrief techniques although without reports of debriefing effect alone.

Adults learn best when they are actively engaged; when the learning is problem centred and meaningful to their life situation and when they can immediately apply what they have learned (Fanning and Gaba 2007). Simulation education utilises these principles by creating replicated real-life scenarios for team practices. Essential parts of the 3-step simulation process include briefing, simulation and debriefing with academic support (Cant and Cooper 2010) using either computer-based high fidelity mannequins, standardised patients or alternatively, peer review learning and low fidelity simulation (Wisborg et al 2006).

Debriefing can stand alone as an educative method for clinical practice. Papaspyros et al (2010) utilised a daily team brief-and-debrief routine in the operating theatre that aimed to enhance overall teamwork. Nursing and medical staff prepared for surgery by sharing information about cases and planning. Daily debriefing enhanced team cohesion through socialisation and learning and improved quality by identifying recurring problems. Further, brief-and-debrief may offer informal learning opportunities for new staff members as elements of this form of learning mirror the mentoring and supporting role intended of critical incident debriefing. For example, when nurses and medical staff in the United Kingdom were debriefed after failed paediatric resuscitation attempts, Ireland (2008) reported that their main aim was to resolve medical, psychological and emotional issues.

In medicine, Edelson et al (2008) reported positive outcomes for cardiac resuscitation team performance. This used debriefing review of actual cardiopulmonary resuscitation (CPR) performance transcripts obtained from CPR-sensing and feedback-enabled defibrillator equipment. Medically-qualified team members were debriefed for 45 minutes with two to four recent CPR attempts using this audio-visual feedback and further periodic debriefs. The study showed an improved initial patient survival rate for the debriefed group and significantly improved performance data compared with historical controls. Medical staff also reported improved understanding of the resuscitation guidelines, a higher comfort level, and improved leadership skills.

Debriefing for individual learning

Debriefing is used in a diverse set of nursing curricula covering topics such as ECG interpretation, anaesthetics and blood transfusions, midwifery and cardiac emergencies at all educational levels (table 3). Studies describe a variety of feedback techniques including face to face, numeric and graphical transcripts of performance from equipment, video conferencing, or video replay. Timely, quality feedback is essential with active student participation (Bienstock et al 2007). Video review, therefore, offers opportunity for the clinical event to be paused, enabling 'in the moment' performance evaluation for students' reflection.

Study	Target group	Topic focus
Bambini et al 2009	Bacclaureate nursing students	Post-partum nursing care training using simulation with debrief
Brown and Chronister 2009	Senior bacclaureate nursing students	Electrocardiogram interpretation course including simulation and debrief
Bryans 2004	Registered nurse community health visitors	Community nurses' health visiting expertise assessed via simulated interviews with patient actresses, a debrief interview and observation
Dine et al 2008	Registered nurses	Learning CPR skills through simulation with audiovisual feedback and face to face debriefing
Groffman et al 2007	Registered nurse anaesthetist students	Trainee nurse-anaesthetist performance with simulation and debrief
Hogg 2006	Registered nurses in hospital	Developing safe blood transfusion practices through simulated ward exercises with debriefing
Kuiper et al 2008	Pre-registration nursing students	Debriefing with a clinical reasoning model during high fidelity patient simulation
Mikkelsen et al 2008	Second year nursing students	Infection control training using scenarios and debriefing
Norris 2008	Student midwives	Emergency midwifery training including simulation and debriefing
Rosenzweig et al 2008	Nurse practitioner students	Training to conduct 'difficult communications' using simulation and structured debrief
Scherer et al 2007	Registered nurse- practitioner students	Cardiac event training using clinical simulation and debrief

Table 3: Debriefing in nursing studies

Effectiveness of debriefing for learning

Although debriefing is used in numerous studies of nurse education (often in combination with simulated learning), only one study was identified that reported on the effect of debriefing *in nursing*. Dine et al (2008) tested various methods of debriefing following simulated cardiopulmonary resuscitation (CPR) skills education for 65 registered nurses in a randomised intervention study. All participants completed three CPR trials. In the second round, a 'feedback' group received automated audiovisual feedback from defibrillator equipment during their CPR performance [screen-based measurements of chest compression rate and depth from an accelerometer and a force-detection sensor on the machine]. A 'debriefing' group received a short verbal debriefing on their performance immediately after it. Both groups improved their CPR performance but only the verbal debrief group showed significant improvement in compression depth. Participants in both groups

received a subsequent face to face debriefing using a transcript of their CPR effort from the equipment: both numeric and graphed analysis of performance. Each was counselled on how to improve their performance to meet current CPR guidelines. There was significant overall improvement in performances of both groups when assessed by depth and rate of chest compressions in a simulated CPR after verbal guidance was given. Therefore, it appears that the mode of debriefing chosen affects nurses' learning and a combination of verbal face to face and real-time audiovisual feedbacks are optimal.

In medicine, Morgan et al (2009) conducted a randomised controlled trial of 58 anaesthetists' simulation-based training with or without debriefing. Six months later, participants who had received face to face debriefing performed significantly better than those who did not receive an interactive debrief.

Furthermore, some studies in medicine and nursing based on simulation *together with* debriefing have shown improvement in knowledge and/or skills using this approach when compared to didactic methods of learning. Of 11 studies that reported on the learning of individuals (in table 3) all reported positive overall learning outcomes with only one (Dine et al 2008) showing a statistically significant improvement and this result was facilitated by use of objective measures of effect. The result, however, concurs with other studies of simulation/debrief in medicine (Deering et al 2004). In these studies the effect of debriefing is confounded by assessment of simulated practice, so the efficacy of debriefing alone for learning is uncertain.

Effective debriefing techniques

The success of debriefing for learning depends on the facilitator's role; it requires training in applicable debriefing techniques. Thus, a framework for effective debriefing from the Advanced Life Support Group of the Resuscitation Council (UK) (Mackway-Jones and Walker 1999) is presented. The authors have utilised this framework in nursing studies with positive learning outcomes (Buykx et al 2011; Cooper et al 2010b). Key requirements include a teaching plan, attention to the physical environment, setting the mood for the learner, managing the dialogue, and implementing a succinct summary and closure. A learner's reflection on their actions is key to their learning experience, being guided (not driven) by the facilitator (Fanning and Gaba 2007). The core principles and key facilitator skills are summarised in table 4.

De	brief stage	Education requirement	Core principles
1.	SET - Preparation	Facilitator development and training Environmental (appropriate facilities) Preparation of learner – suggest plan and objectives of the debrief	Timely Constructive Non-judgmental Based on direct observation of scenario
2.	DIALOGUE – The debrief	Describe the event Analyse the event Application of the event (how did the views formed match the event and relate to the learner's experience?)	 Application of 'Beefburger Technique' (good - bad - good in final 'closure') 1. Learner indicates what went well 2. Facilitator adds key positive performance points 3. Learner indicates key points for improvement 4. Facilitator adds additional points
3.	CLOSURE – Final summary and take home message	Facilitator answers any final questions Summarise the key learning points	Any questions, then- Facilitator summarises good points and points for improvement and final key positive performance issues. [Avoid questions right at end of the session as these may deflect attention from key issues]

Table 4: Core principles and stages of a perform	nance debrief
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Source: adapted from Mackway-Jones and Walker, 1999.

However, as was noted earlier, adult learners learn in different ways. Debriefing in nurse education often applies to skills or task-based learning related to individual's current knowledge or skill. The educational literature suggests that debriefing may assist a low-performing student by allowing revision and thereby improve performance, rather than benefiting more proficient students (Shute 2007). Nevertheless, Draycott et al (2008) argue that one reason formative feedback assists learning development is because it avoids high anxiety levels of students created by more formal summative feedback or examinations. In summary, it is likely that debriefing techniques improve professional practice at all levels and in many contexts, improving clinical skills and competence. The evidence to date is, however, not substantial.

CONCLUSION

Formative debriefing and feedback processes enhance experiential learning and are an essential component of simulation training. However, to improve learning facilitator skills are essential in accordance with best practice.

Debriefing techniques are incorporated into a broad spectrum of curricula including individual and team training for clinical and critical events. The process is essential following critical events in clinical practice, but should also be incorporated into programs of learning following formative and summative assessments. Benefits will be realised in clinical skills and simulation based learning and teaching, whilst debriefing and feedback techniques are also likely to benefit individuals and teams in approaches such as case-based and problem-based learning. However, the clinical impact on patient care of debriefing as learning for nurses has not been measured to date. To this end, further research is warranted to fully establish educational applications and the short-term and long-term effect of the educational approach.

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