Nurse Education Today 34 (2014) e58–e63

Contents lists available at ScienceDirect

Nurse Education Today

journal homepage: www.elsevier.com/nedt

Review

A systematic review of the effectiveness of simulation debriefing in health professional education

Tracy Levett-Jones [a,*], Samuel Lapkin [b,1]

[a] The University of Newcastle, Faculty of Health and Medicine, School of Nursing and Midwifery, Richardson Wing, University Drive, Callaghan, NSW 2308, Australia

[b] Centre for Applied Nursing Research, South Western Sydney Local Health District, School of Nursing & Midwifery, University of Western Sydney, Ingham Institute for Applied Medical Research, Locked Bag 7103, Liverpool BC, NSW 1871, Australia

ARTICLE INFO

Article history:
Accepted 29 September 2013

Keywords:
Debriefing
Simulation
Health professionals
Systematic review

SUMMARY

Objective: The objective of this review was to identify, appraise and synthesise the best available evidence for the effectiveness of debriefing as it relates to simulation-based learning for health professionals.

Background: Simulation is defined as a technique used to replace or amplify real experiences with guided experiences that evoke or replace substantial aspects of the real world in a fully interactive manner. The use of simulation for health professional education began decades ago with the use of low-fidelity simulations and has evolved at an unprecedented pace. Debriefing is considered by many to be an integral and critical part of the simulation process. However, different debriefing approaches have developed with little objective evidence of their effectiveness.

Inclusion Criteria: Studies that evaluated the use of debriefing for the purpose of simulation-based learning for health professionals were included. Simulation studies not involving health professionals and those conducted in other settings such as such as military or aviation were excluded.

Review Methods: A review protocol outlining the inclusion and exclusion criteria was submitted, peer reviewed by the Joanna Briggs Institute (JBI) for Evidence Based Practice, and approved prior to undertaking the review. A comprehensive search of studies published between January 2000 and September 2011 was conducted across ten electronic databases. Two independent reviewers assessed each paper prior to inclusion or exclusion using the standardised critical appraisal instruments for evidence of effectiveness developed by the Joanna Briggs Institute.

Results: Ten randomised controlled trials involving various debriefing methods were included in the review. Meta-analysis was not possible because of the different outcomes, control groups and interventions in the selected studies. The methods of debriefing included: post simulation debriefing, in-simulation debriefing, instructor facilitated debriefing and video-assisted instructor debriefing. In the included studies there was a statistically significant improvement pre-test to post-test in the performance of technical and nontechnical skills such as: vital signs assessment; psychomotor skills; cardiopulmonary resuscitation; task management; team working; and situational awareness, regardless of the type of debriefing conducted. Additionally, only one study reported consistent improvement in these outcomes with the use of video playback during debriefing. In two studies the effect of the debrief was evident months after the initial simulation experiences.

Conclusion: These results support the widely held assumption that debriefing is an important component of simulation. It is recommended therefore that debriefing remains an integral component of all simulation-based learning experiences. However, the fact that there were no clinical or practical differences in outcomes when instructor facilitated debriefing was enhanced by video playback is an important finding since this approach is currently considered to be the 'gold standard' for debriefing. This finding therefore warrants further research.

Introduction

The use of simulation for health education purposes began decades ago with the use of low-fidelity mannequins (Nehring and Lashley, 2009) and has evolved at an unprecedented pace. Debriefing is considered by many to be an integral and critical part of simulation learning experiences (Arafeh et al., 2010; Issenberg et al., 2005; Shinnick et al., 2011). Debriefing approaches associated with simulation in health care aim to improve learning, future performance and ultimately patient outcomes. This is achieved, in part, by providing an opportunity to clarify the learner's knowledge and rationale for actions during the simulation experience (McGaghie et al., 2010). In a systematic review of high-fidelity simulation literature Issenberg et al.

* Corresponding author. Tel.: +61 2 4921 6599.
E-mail addresses: Tracy.Levett-jones@newcastle.edu.au (T. Levett-Jones), samuel.lapkin@sswahs.nsw.gov.au (S. Lapkin).
[1] Tel.: +61 2 8738 9353.

0260-6917/$ – see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.nedt.2013.09.020

(2005) reported that 51 studies listed educational feedback during debriefing as the single most important feature of simulation-based education.

Evidence suggests that various debriefing approaches have developed with little objective evidence of their effectiveness. Some studies suggest that a structured debriefing should occur immediately after simulation (Cantrell, 2008; Decker, 2007; Flanagan, 2008); and the use of video recordings of the simulation is said to enhance debriefing sessions by stimulating learning and discussion based on an accurate account of events (Grant et al., 2010). There are conflicting views regarding the ideal length of debriefing with some proposing it should typically be three times longer than the length of the scenario (Arafeh et al., 2010); and others limiting it to 10 min after a 45 min simulation (Cantrell, 2008). There is also uncertainty about who should be involved in debriefing and the ideal number of participants, with one study claiming that four participants per debrief are most appropriate (Wagner et al., 2009).

The issues highlighted here, along with the limited number of high quality empirical studies, illustrate the gaps that currently exist in relation to the effectiveness of debriefing in simulation-based learning. A search of Cochrane Database of Systematic Reviews and the Joanna Briggs Institute (JBI) Library of Systematic Reviews did not identify any systematic reviews focusing on simulation debriefing. This gap in evidence is an important finding given the assumption that the purpose of debriefing is to facilitate learning. Thus, the aim of the review was to appraise and synthesise the best available evidence based on primary studies comparing debriefing to no debriefing or different types of debriefing as it relates to simulation-based education for health professionals.

Review Method

Criteria for Considering Studies

The systematic review was conducted according to a *priori* methodology outlined in a protocol that was peer-reviewed and published on the Joanna Briggs Institute (JBI) database of systematic review protocols (Levett-Jones and Lapkin, 2011). Empirical studies that evaluated the use of debriefing for the purpose of simulation-based learning were eligible for inclusion. Simulation studies not involving health professionals and those conducted in other settings such as such as military or aviation were excluded. The designs of these studies included experimental and quasi-experimental studies. Outcome measures of interest included any objectively measured self-confidence, knowledge acquisition, performance of psychomotor skills, and performance of non-technical skills such as situational awareness, communication and teamwork.

Search Strategy

The quantitative evidence published between January 2000 and September 2011 was explored across 10 major electronic databases. Additional studies were identified through the reference lists and bibliographies of all identified reports and from the following sources: MedNar, Directory of open access journals and Conference Proceedings.

Assessment of Methodological Quality

Data Collection

Two independent reviewers assessed selected studies for methodological validity prior to inclusion in the review using standardised critical appraisal instruments from the JBI to minimise bias and establish validity of the findings. Data related to the interventions, participant demographics, sample size and reasons for withdrawals and dropouts, study methods and any outcomes of significance to the objective of the review were extracted from the included papers.

Data Synthesis

It was planned to pool quantitative papers in statistical meta-analysis where appropriate. Odds ratio (for categorical data) and weighted mean differences (for continuous data) and their 95% confidence intervals were to be calculated for each analysis. Where possible, heterogeneity between comparable studies was to be assessed using the standard chi-square analysis. However, as there were no comparable RCTs found for this review and as quantitative data could not be statistically combined for a meta-analysis, extracted data were synthesised into a narrative summary.

Results

The initial search strategy identified 1567 papers; after removal of duplicates 29 were deemed potentially relevant to this review, based on the assessment of title. A further 18 studies were excluded for not meeting the inclusion criteria based on examination of their abstracts. The remaining 11 papers were retrieved for detailed examination. Ten papers that met all the inclusion criteria were identified for data extraction and analysis of results. One paper (Zausig et al., 2009) was excluded following assessment of methodological quality because the control and experimental groups were not treated identically other than for the named interventions. The details of the selection process are presented in the PRISMA flow chart (Fig. 1).

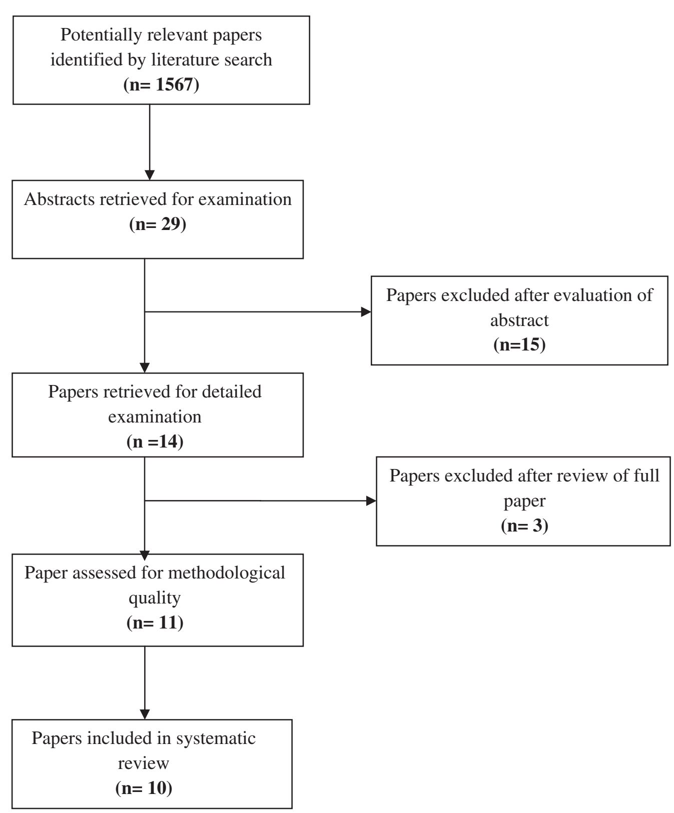

Fig. 1. Study selection flow diagram.