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Review

The effect of scripted debriefing in resuscitation training: A scoping review



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on behalf of the Education Implementation Team Task Force of the International Liaison
Committee on Resuscitation ILCOR¹

Abstract

Objectives: To evaluate the effectiveness of scripted debriefing relative to no use of script during debriefing in resuscitation training.

Methods: This scoping review was undertaken as part of the continuous evidence evaluation process of the International Liaison Committee on Resuscitation (ILCOR) and based on the Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) extension for scoping review. MEDLINE, EMBASE, and SCOPUS were searched from inception to January 2024. We included all published studies comparing scripted debriefing vs non-scripted debriefing evaluating patient outcomes, behaviour change of learners, learning outcomes for learners and cognitive load and teaching quality for instructors.

Results: Our initial literature search identified 1238 citations. After removing 552 duplicates, reviewing the titles and abstracts of the remaining 686 articles yielded 11 for full-text review. Of these, six articles were selected for inclusion in the final analysis. The six studies described debriefing scripts varying in content, framework, scripted language and the integration of objective data. Scripted debriefing improved CPR performance, team leadership skills and knowledge acquisition, but showed no difference in teamwork performance compared to non-scripted debriefing. Scripted debriefing also improved debriefing quality and decreased cognitive load of the instructor during resuscitation training.

Conclusion: The use of a debriefing script during resuscitation education can improve CPR performance, team leader performance, knowledge acquisition and reduce the debriefer's cognitive load. Future research should explore how debriefing scripts can be designed to optimize learning outcomes.

Keywords: Resuscitation, Debriefing, Script, Medical Education

Introduction

Cardiac arrest is a major healthcare issue complicated by high mortality rates and poor clinical outcomes.¹ Advanced life support training has been shown to improve the survival of the victims of cardiac arrest.^{2,3} The formula for survival proposes three key elements contributing to improved survival outcomes from cardiac arrest: medical science, educational efficiency, and local implementation.⁴ Educational efficiency is largely reliant upon the design and delivery of resuscitation training programs, many of which incorporate immersive

simulation-based training methods and debriefing.^{5,6} Debriefing has been defined as a conversation “in which aspects of performance are explored and analyzed with the aim of gaining insights that will impact the quality of future clinical practice”.⁷ It is imperative for the resuscitation community to gain a better understanding of how to optimize the debriefing process given the evolving role of debriefing conversations within resuscitation training programs.

Simulation-based training coupled with post-event debriefing improves knowledge, clinical performance, and non-technical skills performance amongst learners.^{7–12} When conducted after real cardiac arrest events, clinical debriefing improves provider performance

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in subsequent cases,^{13,14} and debriefing informed by clinical event data (e.g. cardiopulmonary resuscitation (CPR) quality metrics) has been associated with enhanced CPR quality¹⁵ and patient survival outcomes from cardiac arrest.^{16,17} Despite these promising findings, there is considerable variability in the way debriefings are conducted across resuscitation training programs and institutions.¹⁸ The variability in the structure, format, and delivery of debriefings may influence the overall impact of the educational intervention.

Debriefing scripts have been developed to help standardize the way debriefing sessions are facilitated during resuscitation training.¹⁹ Debriefing scripts support facilitators by providing some (or all) of the following content pieces: a written plan for the debriefing, which may include topics for discussion, suggested words or phrases to guide discussion, and/or an overarching framework to structure the debriefing.^{20–25} While their use has gained traction in both educational^{20,21} and clinical settings,^{22–24} the benefits of debriefing scripts to support resuscitation instructors have not been clearly summarized. Clarifying the value of debriefing scripts for resuscitation training will assist programs in supporting their instructors with this important resource. In this scoping review, we aim to describe if using a debriefing script, compared with debriefing without a script, improves learning and performance outcomes of learners, patient outcomes, and instructor debriefing performance, workload, and cognitive load.

Methods

Eligibility criteria

This scoping review was conducted as part of the continuous evidence evaluation process of the International Liaison Committee on Resuscitation (ILCOR) Education, Implementation and Teams (EIT) Task Force.^{26–29} The methods and results of this review are reported in accordance with the checklists of Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) Extension for Scoping Reviews.³⁰ The research question was structured in the 'PICOST' (Population, Intervention, Comparison, Outcome, Study Design, Timeframe) format used for ILCOR evidence reviews:

Population: Healthcare providers and laypeople receiving resuscitation training (primary); or instructors teaching resuscitation courses (secondary)

Intervention: Debriefing with a cognitive aid, checklist, script, or tool;

Comparison: Regular debriefing without using a cognitive aid, checklist, script or tool;

Outcomes: Improve patient outcomes, resuscitation performance in the clinical environment, learning outcomes (knowledge and skill acquisition and retention) and learner satisfaction (in the primary population); and improve quality of teaching or debriefing quality, and workload or cognitive load (in the secondary population);

Study Design: Randomized controlled trials (RCTs) and non-randomized studies (non-randomized controlled trials, interrupted time series, controlled before-and-after studies, cohort studies) were eligible for inclusion.

Timeframe: Inception to January 5, 2024

All relevant publications in any language were included as long as there was an English abstract available.

As part of the scoping review, we also aimed to describe the content elements within the debriefing scripts, including the overall structure and design of the script, medical content, debriefing framework and use of scripted language.

Definitions

For the purposes of this scoping review, we defined debriefing scripts as a written plan for the debriefing, including but not limited to various sets of topics or subtopics for the debriefing, suggested words or phrases to guide discussion, and/or a framework to structure the debriefing. Debriefing scripts have been described using different terminology, including: 'debriefing tool', 'debriefing checklist', or 'debriefing cognitive aid', amongst others.^{15,20,21,25,31–34}

Information sources and search strategy

We utilized a search strategy developed in conjunction with an information specialist using the following key terms: "scripted", "script", "cognitive guidance", "debriefing guidance", "cognitive aid", "debriefing algorithm", "debriefing checklist", "debriefing template", "debriefing tool", "debriefing model". The detailed search strategy is shown in [Supplementary file 1](#). We searched Medline, Embase, and Scopus from inception until January 5, 2024. Grey literature was not searched. Reference lists of identified studies were reviewed for additional relevant publications.

Study selection

Titles and abstracts were independently screened by two reviewers, excluding all papers that did not meet eligibility criteria. Disagreements between reviewers were resolved by discussion to reach a consensus; when a consensus was not reached, full text of the paper was obtained. Full text of the remaining papers were analyzed and independently assessed for eligibility by both reviewers. Any remaining disagreements were discussed to reach a consensus on the final group of articles.

Data extraction and synthesis of results

After the final set of articles was identified, one reviewer independently extracted relevant data from all the articles into an Excel spreadsheet. Extracted data was checked for accuracy by a second reviewer. Data extracted included author, publication year, country, study design, population, sample size, intervention and comparison, outcome measures, and results. Extracted information was presented in tabular format and discussed by EIT task force members on several virtual conference calls to identify key insights and future opportunities for research.

Results

Study characteristics

Our initial literature search identified 1238 citations. After removing 552 duplicates, 686 articles were screened by reviewing the titles and abstracts ([Fig. 1](#)). Of these, 11 articles remained for full-text review, of which six studies were selected for inclusion in the final analysis, with publication years ranging from 2013 to 2023 ([Table 1](#)).^{15,20,31–34} Five of these studies were randomized controlled trials,^{15,20,31–33} and one was a quasi-experimental (non-RCT) study.³⁴ In terms of geographic origin of the studies, three were conducted in Canada and/or the USA,^{15,20,32} and one each was conducted in Norway,³⁴ Australia,³³ and Germany.³¹

All studies utilized simulated clinical resuscitation scenarios as the trigger event for the debriefing, with three studies utilizing pediatric scenarios^{15,20,33} and the others with adult scenarios as the clinical event trigger.^{31,32,34} The majority of studies had healthcare providers (or trainees) participate in the simulated scenarios and

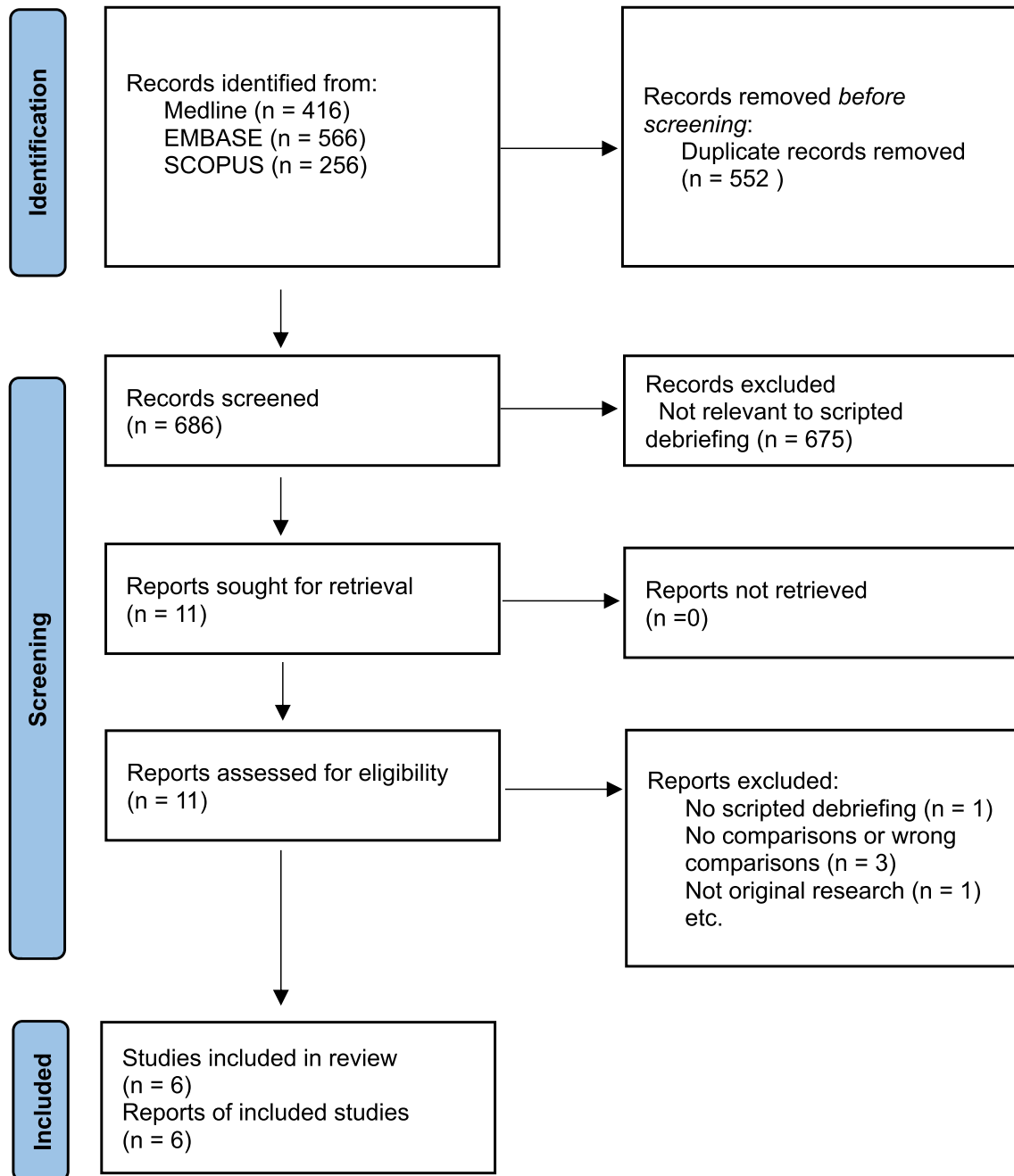


Fig. 1 – PRISMA Diagram, Chart illustrating the flow of articles. Of 686 titles and abstracts, 11 full-text articles were assessed for eligibility, and 6 articles were included in the review.

debriefings;^{15,20,31,33,34} one study took a slightly different approach by using pre-recorded simulated scenarios and actors as participants in the debriefing.³² In that study, the population of interest was the debriefers as they were primarily interested in assessing debriefing quality and debriefer workload and cognitive load.³² Amongst the five studies that recruited participants for the debriefing, prhealthcare providers were participants in three studies,^{15,20,33} and medical or nursing students were participants in the other two studies.^{31,34}

Debriefing script – Content elements

The designs and content elements of the debriefing scripts were variable amongst the six included studies. Five of the included studies

utilized debriefing scripts comprised of an overarching debriefing framework, a list of clinical topics, and trigger phrases to initiate discussion.^{15,20,32–34} The other study described using a debriefing script that included a conversational framework and key teamwork principles but no suggested phrases or wording to support the facilitator.³¹ Amongst the six studies, three utilized the PEARLS (Promoting Excellence And Reflective Learning in Simulation) blended method of debriefing,^{15,32,34} two incorporated advocacy-inquiry into the debriefing script,^{20,33} and the final study employed the GAS (Gather, Analyze, Summarize) debriefing model with a TeamTAG (Teamwork Techniques Analysis Grid) debriefing script.³¹ Only one study integrated objective data directly into the debriefing script; this study col-

Table 1 – Summary of included studies.

Study Author; Year Published Country	Aim of Study; Study Type	Study Population	Study Context and Intervention (# patients) / Study Comparator (# patients)	1° Endpoint Results (Absolute Event Rates, P value; OR or RR; & 95% CI)	Relevant 2° Endpoint Study Limitations and Strengths
Cheng et al 2013 Canada²⁰	Study Aim To determine whether use of a scripted debriefing and simulator physical realism affects knowledge and performance in simulated cardiac arrest. Study Type: 2 x 2 factorial RCT	Learners 453 practicing healthcare professionals (104 teams) Debriefers 90 novice instructors	Context Simulated pediatric cardiac arrest scenarios Intervention: Learners debriefed with scripts by the instructor. Scripts incorporated framework, topics, phrases, but no data (44 / 90 teams) Comparison: Learners debriefed without scripts by the instructor (46/90 teams)	Knowledge Scripted debriefing superior to non-scripted debriefing group in improvement in MCQ tests after debriefing (3.6 vs. 5.3, p = 0.04) Behavioural Assessment Tool Scripted debriefing superior to non-scripted debriefing group in behavioural assessment score (8 vs 16, p = 0.03) Clinical Performance Tool Non-significant difference in Clinical Performance Scale changes between the groups (6.6 vs 7.9, p = 0.18)	Study Limitations -Single cardiac arrest scenario –no facilitator training for use of debriefing script Strengths -examine learning outcomes -multicentre randomized trial Favors scripted debriefing on knowledge and team leader behavioural assessment; non-significant on clinical performance tool
Freytag et al. 2021 Germany³¹	Study Aim To examine the use of a cognitive aid to help structure the content of debriefing and compare it with regular debriefing on satisfaction and teamwork of the learners Study design RCT	Learners 32 medical students Debriefers Advanced medical and nursing students who received training on use of debriefing tool (novice)	Context Six simulated resuscitation scenarios Intervention Participants receiving debriefing with the TeamTAG script (framework, topic [CRM]) (19/32) Comparator Participants receiving a GAS model debriefing with no script (13/32)	Satisfaction with debriefing Non-significant difference between the groups in learner's satisfaction with debriefing (All p > 0.06) Teamwork performance No significant effect of debriefing on teamwork performance at the conclusion of the course (All p > 0.06)	Limitations -Small sample size -evaluating non-technical skills only - no training on use of debriefing script Non-significant on learner's satisfaction, teamwork performance
Meguerdichian et al 2022 USA³²	Study Aim To evaluate the impact the tool on facilitators' cognitive load, workload and debriefing quality Study design RCT	Learners Actors portraying participants in debriefing Debriefers 14 fellows (novice)	Context Prerecorded videos of simulated resuscitation events Intervention Debrief 3 resuscitation scenarios with the PEARLS debriefing tool (framework, phrases, topics; no data). (7/14 instructors) Comparisons Debrief 3 resuscitation	Debriefing quality (DASH scores) Debriefing with tool: 23.6 (19.8, 27.5) Debriefing without tool: 26.0 (21.7, 30.2) Difference: –2.4 (-9.1, 3.4), p = 0.436 Workload (NASA-TLX) Debriefing with tool: 44.0 (35.5, 52.5) Debriefing without tool: 48.5 (40.0,	Limitations -Small sample size -Fail to demonstrate learning outcomes -Actors portrayed participants in debriefings Strengths -Multiple scenarios - structured training to use debriefing script

Table 1 (continued)

Study Author; Year Published Country	Aim of Study; Study Type	Study Population	Study Context and Intervention (# patients) / Study Comparator (# patients)	1° Endpoint Results (Absolute Event Rates, P value; OR or RR; & 95% CI)	Relevant 2° Endpoint Study Limitations and Strengths
			scenarios without PEARLS debriefing tool. (7/14 instructors)	57.0) Difference: -4.5 (-16.5, 7.0), p = 0.456 Cognitive load (PASS) Cognitive load in group with the tool significantly lower in 2/3 scenarios Scenario A: 6 vs. 6, p = 0.13 Scenario B: 5 vs 6, p = 0.04 Scenario C: 5 vs 7, p = 0.03	Favors scripted debriefing on PAAS (cognitive load). Non-significant on DASH score (quality of debriefing) and NASA TLX (workload)
Snelling et al 2022 Australia³³	Study Aim To determine the impact of a script on the quality of debriefs in resuscitation course. Study design: Cluster RCT	Learners Not specified Debriefers: Both novice and expert instructors	Context Pediatric resuscitation course, two pediatric scenarios Interventions Debrief simulated resuscitation with debriefing scripts (framework, phrases, topics, no data) (34/70 simulations in 9/19 sites) Comparisons Debrief simulated resuscitation without debriefing scripts (36/70 simulations in 10/19 sites)	Debriefing quality (OSAD scores) Scripted debriefing superior to non-scripted debriefing in debriefing quality. Non-scripted score: 30.7 vs Scripted score: 34.1, MD 3.5 (0.7 to 6.2), p = 0.01	Subgroup analysis <i>Novice</i> Non-scripted 27.9 vs scripted 32.0; MD 4.1 (0.5 to 7.7), p = 0.03 <i>Expert</i> Non-scripted 34.6 vs scripted 36.0; MD 1.3 (-2.4 to 5.1), p = 0.48 The effect of scripts was significant in novice debriefers. Limitations -Missing data - different methods of debriefing used in control vs intervention Strengths -multi-center -Subgroup analysis - training provided for use of scripts Favors scripted debriefing on OSAD score (quality of debriefing) Subgroup analysis conducted in this study. Scripted

(continued on next page)

Table 1 (continued)

Study Author; Year Published Country	Aim of Study; Study Type	Study Population	Study Context and Intervention (# patients) / Study Comparator (# patients)	1° Endpoint Results (Absolute Event Rates, P value; OR or RR; & 95% CI)	Relevant 2° Endpoint Study Limitations and Strengths
					debriefing had a significant effect on novice debriefers.
Hoegh-Larsen et al. 2023 Norway ³⁴	<p>Study aim To compare PEARLS debriefing tool to a standard unstructured debriefing on nursing student's self-reported professional competence and clinical judgement abilities in SBE and clinical placement</p> <p>Study Design Quasi-experimental / non-randomized</p>	<p>Learners Nursing students</p> <p>Debriefers Nine faculty members completing 3-day facilitator training</p>	<p>Context Clinical scenario with deteriorating patient</p> <p>Intervention Instructors using PEARLS debriefing script tool (framework, phrases, topics, no data). (67/106)</p> <p>Comparisons Instructors debrief with no framework (39/106)</p>	<p>Self-reported nurse professional competency (NPC) No significant difference in all NPC items (all $p > 0.05$)</p> <p>The Lasater Clinical Judgement Rubric No significant difference between the group in LCJR (All $p > 0.05$)</p>	<p>Limitations -Kirkpatrick level 1 outcome only -Single center study -Non-randomization</p> <p>Strengths -structured training using debriefing script</p> <p>Non-significant on nontechnical skill outcomes</p>
Cheng et al. 2023 Canada ¹⁵	<p>Study aim To determine if data-informed debriefing with a debriefing tool, compared with traditional debriefing, improves the process of care provided by healthcare teams during a simulated pediatric cardiac arrest.</p> <p>Study Design: RCT</p>	<p>Learners 80 ED and ICU healthcare providers</p> <p>Debriefers 2 research team members (i.e. not participants)</p>	<p>Context Simulated pediatric cardiac arrest scenarios</p> <p>Intervention Data-informed debriefing using a cardiac arrest debriefing tool (PEARLS model) – framework, topics, phrases, data (40/80 participants)</p> <p>Comparison Traditional debriefing with no objective data and no debriefing tool (PEARLS model) (40/80 participants)</p>	<p>Overall Excellent CPR Data-informed debriefing group superior to traditional debriefing group: control vs intervention: 53.8% vs 78.7%; MD 24.9%, 95% CI: 5.4 to 44.4%, $p = 0.02$</p> <p>Guideline compliant depth Data-informed debriefing group superior to traditional debriefing group: control vs. intervention: 60.4% vs 85.8%, MD 25.4%, 95% CI: 5.5 to 45.3%, $p = 0.02$</p> <p>CC Fraction Data-informed debriefing group superior to traditional debriefing group: control vs intervention: 88.6% vs 92.6, MD 4.0%, 95%CI: 0.5 to 7.4%, $p = 0.03$</p> <p>Peri-shock pause duration Data-informed debriefing group superior to traditional debriefing group: control vs intervention: 5.8 s vs 3.7 s, MD 2.1 s, 95%CI: 3.5 to 0.8 s, $p = 0.004$</p> <p>Time to critical interventions Time to initiate CPR: $p = 0.88$ Time to first defibrillation: $p = 0.63$ Time to first epinephrine: $p = 0.52$</p>	<p>Limitations - Single cardiac arrest scenario Strengths - Tightly scripted debriefing in both groups - Relevant clinical outcomes - Data integrated into debriefing tool Facilitators trained on use of the script</p>

lected CPR quality metrics (e.g. CPR quality, no flow time) from a CPR feedback defibrillator during the resuscitation event that was subsequently used to inform content within the debriefing script.¹⁵ Four studies provided some form of debriefer training to optimize use of the debriefing script;^{15,32–34} in the other two studies the script was introduced to the instructors, but no formalized training was conducted.^{20,31}

Clinical Outcomes, learning outcomes and learner satisfaction

No studies assessed patient outcomes or provider performance during real patient care. A range of participant learning outcomes following debriefing was assessed in four studies.^{15,20,31,34} In a multicenter RCT including 453 healthcare providers, participants who received scripted debriefing (with advocacy inquiry) by novice instructors had improved team leadership skills compared to those who received a non-scripted debriefing ($p = 0.03$).²⁰ In this study, scripted debriefing participants also had improved knowledge acquisition in multiple-choice testing ($p = 0.04$); although no difference was reported in clinical performance scores when compared to the non-scripted debriefing group ($p = 0.18$). One additional study reported the effect of debriefing on teamwork skills.³¹ In this study, the intervention arm was debriefing conducted with a TeamTAG debriefing script that provided a framework with teamwork concepts, while control groups received a non-scripted debriefing utilizing the GAS model. This study showed no difference in teamwork performance ($p = 0.23$) or learner satisfaction ($p > 0.06$) when comparing groups of medical and nursing students who received scripted vs. non-scripted debriefings by their colleagues.³¹

In a randomized trial of 80 healthcare providers, the intervention group received a PEARLS scripted debriefing with integrated objective CPR data collected during the simulated clinical scenario, while the control group received a non-scripted debriefing without objective CPR data. In this study, teams randomized to data-informed script debriefing demonstrated improved overall excellent CPR ($p = 0.02$), guideline-compliant depth ($p = 0.02$), chest compression fraction ($p = 0.03$), and peri-shock pause duration ($p = 0.004$) in a subsequent cardiac arrest scenario when compared to groups that received a non-scripted debriefing.¹⁵ There was no difference between groups in time to critical interventions, such as time to initiate CPR ($p = 0.36$), time to first defibrillation ($p = 0.39$), and time to first dose of epinephrine ($p = 0.73$).¹⁵ Finally, one non-randomized study comparing a scripted PEARLS debriefing to a standard unstructured debriefing amongst nursing students demonstrated no significant difference in clinical judgement between scripted and non-scripted debriefing groups ($p = 0.48$).³⁴

Debriefing quality

The two studies that evaluated debriefing quality in scripted vs. non-scripted groups demonstrated mixed results. In a multicenter, cluster-randomized trial of both novice and expert instructors, scripted debriefings incorporating advocacy-inquiry were compared to non-scripted PEARLS debriefings. Amongst 70 participants, they found improved debriefing quality in the scripted debriefing group when compared to non-scripted debriefings ($p = 0.01$), with the effect of debriefing scripts significant in novices ($p = 0.03$) but not experts ($p = 0.48$).³³ Another single-center RCT found no difference in debriefing quality ($p = 0.436$) between novice instructors using a PEARLS script vs. those not using a PEARLS debriefing script.³²

Debriefing cognitive load and workload

One randomized trial evaluated the impact of a PEARLS scripted debriefing tool when used by novice debriefers (i.e. simulation fellows) facilitating the debriefing of trained actors who portrayed the roles of participants in the video-recorded simulated resuscitations.³² All participants in the control and intervention groups received baseline training on how to conduct a PEARLS debriefing; however, only the intervention group was permitted to use the PEARLS script during debriefing. They found reduced debriefer cognitive load ($p = 0.04$) in the scripted debriefing group, but no difference in debriefer workload ($p = 0.456$) when comparing scripted vs. non-scripted debriefings.

Discussion

Our scoping review exploring the value of scripted debriefing during resuscitation education identified six studies that utilized different types of debriefing scripts varying in content, debriefing frameworks, and scripted language. Amongst these studies, scripted debriefing improved CPR performance,¹⁵ team leadership skills and knowledge acquisition,²⁰ but showed no difference in teamwork performance compared with non-scripted debriefing.³¹ Two studies assessed the quality of debriefing in scripted vs. non-scripted groups, with one study showing improved debriefing quality with the use of a script and the other demonstrating no difference between groups.^{32,33} Lastly, scripted debriefing reduced debriefer cognitive load in one study, highlighting one potential benefit of scripts in the novice debriefer population.³²

We noticed significant heterogeneity in the design, content, and implementation of scripted debriefing across studies. Debriefing scripts were comprised of some (or all) of these key elements: (1) pre-specified content areas or learning objectives (e.g. teamwork principles); (2) a debriefing framework describing phases and/or a debriefing method; (3) scripted language and phrases to trigger discussion and support the facilitator in engaging participants in conversation; and (4) integrated objective data (e.g. CPR quality metrics) acquired during the resuscitation event for discussion during debriefing.^{20,21,25,31–33} The inclusion of these key elements in the debriefing scripts across the six studies was mixed, and the nature and type of content was highly variable. For example, two studies implemented a single method of debriefing (e.g. advocacy-inquiry),^{20,33} while three others utilized tools promoting a blended method and framework of debriefing.^{15,32,34} Furthermore, comparisons made between intervention and control groups were inconsistent across studies, with some studies comparing scripted vs. non-scripted debriefing with the same debriefing framework in both groups,^{15,32} and others utilized different debriefing framework(s) or methods between the two groups.^{31,33} The heterogeneity in script content and comparison groups across studies make it extremely difficult to determine what elements of debriefing scripts are most important, and if the effects identified were due to the debriefing script or differences in debriefing framework or debriefing methods.

The skilful facilitation of a debriefing conversation is highly dependent upon debriefer expertise and prior training. Many studies selected novice instructors as their debriefer participant population,^{20,31–33} suggesting that their baseline expertise in debriefing was relatively low. The methods used to familiarize these debriefers to the debriefing script were variable, with some receiving comprehensive debriefing training and others just handed the debriefing

script immediately prior to use. As no studies reported compliance or adherence with scripted language, we were unable to determine how effective the debriefing scripts were in guiding debriefing performance. We suspect this may have been a contributing factor to why studies showed mixed results when assessing the impact of debriefing scripts on the quality of debriefing.^{32,33} Based on the results of this review, it seems as though novice instructors are the group most likely to benefit from debriefing scripts; however, we would like to see future studies report adherence with scripted language or content to better characterize debriefing behavior change amongst debriefers.

The integration of objective CPR quality data into debriefing scripts represents a promising feature that warrants further exploration. The one study that integrated objective data pulled CPR quality data from the CPR feedback defibrillator used during the simulated resuscitation event.¹⁵ This data was then directly integrated into the script, cueing the facilitator to discuss each CPR metric in a structured manner, supported by evidence-based strategies for each CPR performance deficit. In contrast to the debriefing scripts described in other studies, this design allowed the content in the script to be linked to clinically relevant performance metrics (e.g. CPR depth, no flow time) that are directly associated with patient outcomes. Future studies should explore how objective data representing clinically relevant measures can be linked to the content of debriefing scripts to enhance the overall impact of debriefing during resuscitation education. The application of these principles to clinical event debriefings should be evaluated as lessons learned from clinical event debriefings have immense potential to improve patient outcomes.

Limitations, knowledge gaps, and future research

Our review has several limitations. Our literature search identified only six relevant studies, and these studies had considerable heterogeneity with respect to the design of the intervention, comparison group, and outcome measures. None of the studies reported adherence to the debriefing script. These limitations make it difficult to determine the true impact of debriefing scripts in different contexts (i.e. adult vs. pediatric resuscitation training), and with instructors of varying degrees of debriefing expertise. Due to the limitations, we did not attempt a systematic review with meta-analysis on this topic. To advance our knowledge in this area of resuscitation education science, we see opportunity for researchers to: (1) design debriefing scripts with careful consideration of the four key content elements (i.e. Context/objective, Framework, Language, Integration of objective data); (2) provide training for instructors to ensure they are able to effectively implement all aspects of the debriefing script; and (3) integrate objective data into debriefing scripts that can be linked to clinically relevant outcomes. Future research should report adherence to script use, explore the relative impact of debriefing scripts in novice vs. expert debriefers and in different learner groups, and ensure that studies are designed to clearly isolate the effect of the debriefing script from the debriefing framework or method.

Conclusion

Results from this scoping review suggest that the use of a debriefing script during resuscitation education can improve CPR performance, team leader performance, knowledge acquisition and reduce debriefer cognitive load. Future research should explore how debriefing scripts can be optimally designed to deliver optimal learning outcomes across different learner groups.

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None.

CRedit authorship contribution statement

Yiqun Lin: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. **Andrew Lockey:** Conceptualization, Formal analysis, Investigation, Methodology, Writing – review & editing. **Robert Greif:** Conceptualization, Data curation, Investigation, Methodology, Supervision, Writing – review & editing. **Adam Cheng:** Conceptualization, Data curation, Formal analysis, Methodology, Supervision, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: YL, AL, RG, and AC are members of the ILCOR EIT Task Force (RG is chair, AC is vice-chair). RG is ERC Director of Guidelines and ILCOR, AL is President of Resuscitation Council UK, and AC is faculty for the Debriefing Academy, which offers faculty development courses in debriefing. AC declared an intellectual conflict of interest and was excluded from data extraction for studies he authored. AC, AL, and RG are Editorial Board members of Resuscitation Plus.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.resplu.2024.100581>.

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