Debriefing Methods in Simulation-Based Education

Abstract

Simulation-based education provides the transfer of the theoretical and practical knowledge gained in the learning environment to the clinical environment. Learning in a clinical simulation takes place in debriefing. Accordingly, debriefing is the main component of clinical simulation. Debriefing is conducted under the management of a facilitator and is an activity performed after the simulation. Debriefing facilitates participants' critical thinking through reflective thinking. The primary goal in performing a debriefing is to allow facilitators and participants to participate in and reflect on the simulated clinical experience. There are various models used to facilitate the information-sharing process in a debriefing. Several models have been proposed for discussions after simulation, which have been categorized as three-phase, multiphase, and other debriefing models and frameworks. In this review, the importance and methods of debriefing in simulation-based education are discussed.

Keywords: Simulation, debriefing, methods, nursing education, student

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Introduction

Gaining expertise and continuing vocational education beyond formal education are highly important for today's nursing students. To those ends, nursing students need to develop the metacognitive skills that will enable them to understand how learning takes place in the most effective ways. In addition, they should be able to mentally analyze not only what happened and how they happen but also why they happen.[1] Simulation-based education allows students to improve their cognitive, affective, and psychomotor skills in an active learning environment.[2] Moreover, this education model enables the incorporation of theoretical and practical knowledge and is thus an important learning activity in nursing education.[3]

Learning occurs through simulation, whereas comprehension takes place in debriefing through reflective thinking.[4] In this way, students gain clinical experience through multiple clinical variations and are provided with an environment that allows errors, focuses on active learning opportunities, and facilitates critical thinking skills and clinical judgment.[5]

Debriefing and Facilitator

Debriefing is the main component of simulation-based education, which is carried out with a facilitator aiming to explore and understand the relationships between events, actions, thoughts, emotional processes, and the performance results of the simulation.[6] In addition, debriefing facilitates reflective thinking through structured discussion and feedback after the simulation and also improves the decision-making process and allows participants to organize their performance.[7] This way, it allows participants to think reflectively and critically.[5]

Debriefing in simulation-based education is a cornerstone of learning.[3] In debriefing, the facilitator creates a safe environment for students, which is highly important for the effectiveness of debriefing. In addition, how well students analyze and manage clinical situations are determined in debriefing.[8]

The primary goal of debriefing is to allow participants and facilitators to participate in the simulated clinical experience and reflect on what they have learned to their future experiences. However, there is wide variation in the conduct of debriefings. Although the best structure or framework has not yet been defined, the literature emphasizes that debriefing is closely associated with the facilitator.[2] To ensure the active participation of students, facilitators should create a suitable environment. In addition, the facilitator should also or-

Table 1. Criteria for a standard debriefing[13]	
No	Criteria
1.	It should be conducted by an authorized individual.
2.	It should be conducted in a learning and supportive environment with reliable, open communication, allowing self-assessment, feedback, and reflective thinking.
3.	It should be facilitated by individuals who can effectively manage the duration of the simulation.
4.	It should be based on a theoretical purpose-driven framework.
5.	It should be consistent with the goals and learning outcomes of the simulation-based experience.
No: number.	

ganize the physical environment, set the learning goals and outcomes, and allow students to analyze the situation.[8]

In a debriefing, students discuss most of the session themselves, contrary to the traditional classroom setting where the facilitator is the focus of the learning process. To initiate group interaction, the facilitator should make an effective start to attract the students into the discussion environment. Overcrowding of participants leads to negative impacts on the discussion environment. Roundtable meetings are suitable for small-group discussions because they allow participants to feel equal.[8] Facilitators should show an interest in participants' learning and encourage them to answer their own questions to guide them toward critical thinking and clinical reasoning.[2] However, in this process, facilitators may encounter the following difficulties in debriefings:

1. Providing equal opportunities for all students in the debriefing.
2. Providing a comprehensive debriefing with structured feedback and allowing all students to implement transitions in the stages of the debriefing; and
3. Defining the effectiveness of the debriefing and determining whether students have reached the desired proficiency at the end of the experience.[9]

Debriefing Standards and Recommendations

There are numerous expert opinions on how a debriefing should be structured. Nevertheless, there is little evidence regarding debriefing practices that best contribute to learning.[2] Shinnick et al.[10] in 2011 investigated the importance of debriefing and suggested that although knowledge is gained through debriefing, more debriefing research is needed to reach a final judgment. Who will attend the debriefing; when, where, and how it will be conducted; and what results are expected are the emerging issues related to debriefing.[5] On the other hand, the debriefing should reflect both the overall process and the individual performance of the participants. In addition, there is a consensus on how to transfer predetermined goals from experience to practice and on the fact that these goals should include a discussion regarding the reflection process.[5]

In a simulation, dressing the students according to the scenario does not only simulate the clinical setting or provide a simulated environment of reality but also allows students to adapt to that role and develop behavioral changes.[8] It has been shown that the feedback provided by both facilitators and peers facilitates participants' learning. Feedback is often used interchangeably with the concept of debriefing. However, feedback is a 1-way form of communication regarding participants' behavior or performance. For this reason, debriefing and feedback are distinct processes.[3] Participants in a debriefing have the opportunity to reflect on their feelings about their learning

experiences and also to analyze and synthesize their thoughts and ideas.[11] Conducting a debriefing with 1-way feedback is an obstacle to understanding the learners' perspective and identifying the real performance gap. Behavior change is more likely to be regulated by double-loop learning (changing the underlying false values and actions and correcting errors) than by single-loop learning (correcting errors without changing the underlying false values and correcting errors). Studies recommend systematic guidance of participants through reflective thinking during the debriefing in line with predefined learning outcomes.[3]

Debriefing is a highly interactive process and also a formative assessment method in which the performance is not only evaluated by the facilitator but is also developed through a dialog between the facilitator and the participants.[12] Debriefing and formative assessment often serve the same purpose, although their origins are highly different. Debriefing originates from the practice of reviewing the purpose to develop the next experience. On the other hand, formative assessment emerged for the evaluation of the curriculum or the participants and for allowing feedback and improvement.[12]

Debriefing should be structured as a planned activity in a safe learning environment where evidence-based practices and learning outcomes are discussed by individuals during the learning process.[3] The International Nursing Association for Clinical Simulation and Learning has developed standards of best practice in simulation, including analysis sessions.[3] Table 1 presents the criteria for a standard debriefing.

All group members, including the facilitator, must attend the debriefing.[2] Ideally, the debriefing should allow participants to develop applicable strategies for their future performance.[6] Describing debriefing as the heart and soul of the simulation, Rall et al.[14] suggested that an unplanned debriefing session may lead to negative consequences, such as wrong habits, loss of motivation, and humiliation. Therefore, an effective debriefing facilitates maximum learning outcomes, whereas a poor debriefing can harm participants. Suggestions regarding debriefing are presented in Table 2.

The Debriefing Methods

There are various methods used for debriefing. Of these, the facilitator-led debrief is the traditional method.[2,15] Self-debriefing is a method in which participants evaluate their performance with their peers. Video-assisted debriefing is another method that combines the analysis of simulation records with verbal discussion.[2,15] However, in this method, it is necessary to provide participants with necessary explanations and obtain their consent before video recording.[2,15] Moreover, facilitators should take into account the fact that some participants may be reluctant to monitor their own performance owing to feeling humiliated, threatened, and stressed.[7] Using video recording in a

Table 2. Recommendations for debriefing[5]
Recommendations
Ask questions to encourage in-depth participation.
Follow the topics and direct the questions and comments back to the participants.
Encourage deeper discussion with what, how, and why questions.
Encourage participants to find their own answers.
Make sure all participants are involved in the discussion.
Ask questions directly to silent participants.
Get comments made on what participants have said.
Avoid involuntary blockage of participation.
Ask questions rather than answer.
Perform active listening to encourage continued participation.
Use silence to elicit thoughtful answers.

scenario provides a powerful tool to reinforce good behavior and accelerate discussions regarding ineffective behavior.[8] Currently, debriefing experiences often involve discussion of the simulation and a review of the video recording of the simulation conducted in the debriefing. In addition to discussion and video review, written debriefing has been proposed to extend learning. However, there are limited studies using a writing component in debriefing.[2] Reed[2] evaluated the experience of discussion debriefing with a written component in 58 nursing students and concluded that the students did not benefit from written debriefing. Today's nursing students, called the millennial generation, prefer group work with 24-hour internet access. For this reason, online methods rather than written debriefing methods are recommendable.[2] Ha[7] in 2014 examined video-assisted debriefing and concluded that this method developed students' technical and nontechnical skills and also encouraged them toward analytical thinking. Verkuyl et al.[16] in 2018 evaluated three types of debriefing (in-person, virtual, and self-debrief) after a virtual gaming simulation and found no significant difference among these methods. On the basis of these results, Verkuyl et al.[16] suggested that other methods could be used instead of the traditional face-to-face debriefing method. Table 3 presents sample expressions used for each stage in a debriefing.

Debriefing usually takes place immediately after simulation to allow participants to express their emotions, followed by the review of video recordings. Expert opinions on how to discuss debriefing have been published extensively across disciplines, and there are different debriefing session models and frameworks proposing useful solutions. Current studies examining debriefing models show the potential effectiveness of alternative debriefing methods; however, more research comparing these methods is needed.[2] There is no specified duration for video playback in a debriefing.[15] Several methods have been proposed for discussions after simulation, and there are several differences in each of these approaches; however, there is limited evidence to show that one method is superior to another.[2,17] Glessman et al.[18] examined nursing educators' views on the effectiveness of the Debriefing for Meaningful Learning (DML) method and concluded that the method improved students' critical thinking and problem-solving skills, whereas its isolated use was not supported.

Debriefing models have been categorized as three-phase models, multiphase models, and other models and frameworks. The three-phase models include Reaction, Understanding, Summary, Take-home message (RUST); Gather, Analyze, Summarize, (GAS); Defusing, Discovering, Deepening (3D); Diamond; and recollection, reflection, and review (3-R). Multiphase models include Mitchell's model; Events, Emotions, Empathy, Explanations (Four Es); Guidelines, Recommendations, Events, Analysis, Transfer (GREAT); Guided team self-correction, Advocacy-Inquiry, Systemic-constructivist (TeamGAINS); Defining, Explaining, Benchmarking, Reviewing, Identifying, Explaining, Formalizing (DEBRIEF); Learning Objectives, Emotions, Actions, Reflection, Next Steps (LEARN); DML; and Promoting Excellence and Reflective Learning in Simulation (PEARLS). The other debriefing models and frameworks include directive feedbacks, advocacy inquiry-focused facilitation, plus/delta, and after-action review.

Three-Phase Models of Debriefing

These models refer to a debriefing approach consisting of three main stages: response, analysis, and summary/result. In these models, each debriefing session can last for 20-45 minutes depending on the complexity of the scenario and on the number of different professions included in the model. The time allocated for the session is closely related to the debriefing approach adopted, characteristics of the group, and the type of simulation activity. Therefore, these models require some flexibility, and the time allocated for the debriefing session often should be twice or at least equal to the duration of the simulation. These models facilitate reflective thinking and should be performed as soon as possible after the simulation.[17] The models include:

The RUST Model (Reaction, Understanding, Summary, and Take-home message): The RUST model was developed by Karlsen in 2013 and includes the following phases: Reaction, Understanding, Summary, and Take-home message. In the Reaction phase, participants are asked about their views regarding the scenario. In the Understanding phase, participants are asked to analyze what happened and why on the basis of their observations. In the Summary phase, what the participants learned through the scenario is examined. In the Take-home message phase, the learning outcomes that will be conveyed to the clinical environment by the participants are examined.[17]

The GAS Model (Gather, Analyze, Summarize): The GAS model is defined as a structured and supported approach to simulation.[19] The Gather phase encourages the team to summarize simulation events for the creation of a common mental model. The Analyze phase focuses on student-centered reflective thinking and the analysis of events during the simulation. Moreover, in this phase, open-ended questions are probed to discover students' thinking processes with the aim of promoting their reflective thinking. In the Summarize phase, all the key learning objectives and teaching points are addressed, and the lessons learned are reviewed.[20]

The 3D Model of Debriefing (Defusing, Discovering, Deepening): The 3D model was designed to address individuals and their experiences and micro and macroenvironments. The model consists of three phases. It begins with Prebriefing, moves on with the steps of Discovering and Deepening, and ends with the targeted learning outcomes.[21] After the simulation, the model encourages participants to learn in the debriefing session. It accompanies the learning process in a similar way to other debriefing models.[17]

The Diamond Model: This model was first described in 2015.[22] It consists of three phases: Description, Analysis, and Application. Common questions probed in this model include "What happened?" and "How did the experience make you feel?"[(17)] It is an easy-to-apply model and is

Table 3. Sample expressions used for each stage in a debriefing[17]	
Introduction	Thank you all for your active participation in the scenario.
	We want everyone to stay in contact in a respectful and professional manner.
	Please be reminded that we do not desire offensive or incriminating comments, insults, or negative reviews.
	There will be three or four different stages in this process.
	The process will take no more than approximately 30 minutes (or it will approximately take the time twice the duration of simulation).
Reaction	How was the scenario?
	Describe your feelings and thoughts about the scenario.
Analysis	What was the scenario about?
	What happened to the patient?
	In what situations did you and your team succeed and feel challenged?
	What was supposed to happen and what actually happened?
	I noticed some of you mention …; I was thinking the same thing and wondering if we could discuss this further.
	Exactly, this scenario was about …, and did everyone understand it?
	I would like to know why this procedure was not performed. I also wonder what you are thinking about it.
	Can you think of any strategies to tackle this problem in the future?
Summary	What can we learn from this scenario?
	What could you do in a similar situation you would face in the future?
	What would you do differently if you had to do it again?
	What did we discuss in this scenario?
	If you encountered the same situation in a real environment, which point would you particularly consider?
	What did you learn today?
	Please tell me a key learning point you learned from this scenario.
Conclusion	Do you have anything to ask?
	Thank you again for participating in the scenario and the debriefing.
	I hope this simulation will be useful for your clinical practice.

practically double sided. Whereas the first side contains the questions and the skeleton of the model, the other side presents the theoretical background. In previous studies, both educators and students indicated that the Diamond model is a sufficient and useful debriefing model.[22]

The 3-R Model of Debriefing (Review, Response, Remind): This model originated from the International Critical Incident Stress Foundation.[23] In the Review phase, questions such as "How did it go?," "How do you think you did it?," and "What inappropriate acts did you perform?" are probed. The Response phase involves the concerns of the team members about their own perceptions and performance. The Remind phase is designed to encourage the team members to recall what they have done.[17]

Multiphase Models of Debriefing

Multiphase models of debriefing include Mitchell's model, Four Es model, GREAT, TeamGAINS, DEBRIEF, LEARN, and DML.[17]

The Mitchell's Model: This model was described by Jeffrey Mitchell in 1993 and aimed to reduce the stress associated with a critical incident experience. The model consists of 7 independent phases: Introduc-

tion, Facts, Thoughts, Reaction, Symptoms, Teaching, and Re-entry. Although this model is designed for clinical information sharing, it also includes the fundamental steps needed to identify the simulation that highlights emotions and even symptoms.[24]

The Four Es Model (Events, Emotions, Empathy, Explanations): Mort and Donahue in 2004 suggested that debriefing should take place in the form of a discussion addressing each of the Four Es phases. These phases are the fundamental elements of any scenario-based learning event and help both learners and facilitators to better understand the key points in each phase. Facilitators should create a psychologically safe and engaging learning environment, empathize with the participants, and maintain this environment, recognizing that the participants' thoughts and feelings are all valid.[17]

The GREAT Model (Guidelines, Recommendations, Events, Analysis, Transfer): The checklist designed for this model serves as a guideline. The steps in the checklist are not listed in chronological order, and it is possible to jump between steps. The checklist for facilitators prepared by Owen and Follows[25] in 2006 is as follows:

1. Obtain the most recent best-evidence Guidelines for managing the scenario being simulated.
2. If guidelines are not available, use the Recommendations contained in published reviews.
3. Allow some time for participants to reflect on the simulation and identify the important Events.
4. Help participants perform a detailed Analysis of their simulation and performance; and
5. Help participants to transfer theory to practice.[25]

The TeamGAINS Model (Guided team self-correction, Advocacy-Inquiry, Systemic-constructivist): This model includes 6 consecutive steps for facilitators:

1. Participants' reactions.
2. Determining the clinical component of the scenario.
3. Transition from simulation to reality.
4. Discussion of behavioral skills and their relationship with clinical outcomes.
5. Summing up the learning experience; and
6. Controlled application of clinical skills, if necessary.[26]

The DEBRIEF Model (Defining, Explaining, Benchmarking, Reviewing, Identifying, Explaining, Formalizing): This model consists of 7 steps: introducing the rules of debriefing, explaining the learning objectives, evaluating the performance, reviewing the anticipated actions during the simulation, reviewing what was done, defining why and in what way it was done, and formulating the learning. The model provides a clear summary of learning objectives, a clear assessment of performance, and a clear demonstration of the facilitator's behavior during the simulation.[20]

The LEARN Model (Learning Objectives, Emotions, Actions, Reflection, Next Steps): This model developed by Sigalet[27] is organized as follows:

1. L (Learning Objectives): Facilitators need to reconsider their learning objectives in light of observed performance gaps.
2. E (Emotions): Facilitators should ask participants to express an emotion related to the simulation.
3. A and R (Actions and Reflection): Various approaches can be used, such as directive feedback, plus/delta, and advocacy inquiry-focused facilitation.
4. N (Next Steps): The session ends with next steps. The facilitator asks the participants to present something they have learned from the simulation and to tell other participants what to do next.[27]

The DML Model (Debriefing for Meaningful Learning): This model consists of 6 steps: Engage, Explore, Explain, Elaborate, Evaluate, and Extend. It is administered by probing specific questions for the development of clinical judgment and clinical reasoning skills.[28] In this model, Socratic inquiry is performed, which is an approach where the facilitator does not give information and does not initiate responses to the questions of the participants directly, the answers are discovered by asking a series of questions to the participants, and deep questions are probed. Questions include the underlying belief or confusion, thoughts or objections, and the source of the information and its consequences and causes. The early stages of the DML model begin with the following questions: "What is the first thing that comes up to your mind about your new clinical experience?" "What went right and why?," and "What would you do differently and why?"[17]

The PEARLS Model (Promoting Excellence and Reflective Learning in Simulation): This model consists of 3 phases: Responses, Explanation, and Analysis. The model provides flexibility for the learning strategy. In other words, the model reflects a blended technique. The plus/delta process is used for self-assessment of the participants, whereas the advocacy inquiry-focused facilitation, which is used for summarizing, is utilized by the facilitator. The key point in this model is participants' adaptation to the situation, their behavior and effective use of time, and the closure of their performance gaps.[17]

The PEARLS model utilizes three strategies: facilitating the discussion of targeted outcomes, creating opportunities for self-assessment of students, and providing direct feedback or learning. The model also provides an adaptable structural framework for the administration of debriefing for various purposes, such as clinical decision making, technical skills development, teamwork, and interprofessional collaboration.[29]

Other Debriefing Models and Frameworks

There are some other approaches for evaluating debriefing after a simulation. In a debriefing, 1 or more models can be used together, and communication techniques can also be utilized. The important point in this model is an adaptation to the situation, participants' behavior, time, and the performance gaps to be closed. The methods commonly used for simulation include directive feedback, advocacy inquiry-focused facilitation, plus/delta, and after-action review.[17]

Directive Feedback: Although feedback can be used interchangeably with debriefing, these two entities are not the same. Of note, whereas feedback is a one way process, debriefing is a two way process. Feedback, in itself, is not a teaching strategy; rather, it is a communication strategy that can be used intermittently, does not require learners to think deeply, and includes learning objectives.[9] Directive feedback is a result-centered, didactic report provided to the students after the simulation. It also involves active communication of corrective information to the students based on the evaluation of the action, event, or process.

Advocacy Inquiry-Focused Facilitation: It is a widely used communication technique in debriefing.[17] It is used for exploring participants' performance gaps regarding cognitive and behavioral characteristics.[29] It is conducted under the guidance of the facilitator and is student oriented. In this technique, questions are probed to discover the reasons behind the actions.[17]

Plus/Delta: It is an information-sharing approach focused on the process and participants, usually managed by a facilitator.[30] The participants are probed "What did you do in this scenario?" and all of them are required to provide an answer. When all answers are obtained, the facilitator asks, "What would you like to improve?" or "What things could be improved?".[31] In this method, a discussion is carried out rapidly and easily, learners are allowed to perform self-assessment, and multiple solutions can be produced in a short period of time. However, participants may easily get lost during the process of debriefing because the method does not have a strict rule to follow, such as passing through the positive and negative points in a chronological order. Moreover, because the question "Why?" is not asked in this method, the opportunity to discuss the purpose of the actions may be missed. It is often the facilitator that closes the performance gaps, and thus, the method does not encourage self-reflection of learners.[9,29]

After-Action Review: It is a modified plus/delta method that contains the reasons for the actions. First, the facts are discovered by two questions: "What was supposed to happen?" and "What really happened?" These questions allow participants to recognize the importance of the delta. The facilitator then starts a discussion with two questions: "Why did it happen and how can we improve it?" and "What can we

learn from this?" In the simulation environment, the final question is "What went well, what did not, and what would you do differently if you faced with a similar situation in real life?"[20] After-action review is a participant-centered information-sharing technique, in which discussion can be highly interactive. A mental framework is presented to the students to help them understand the reason for the action being performed. Moreover, in the after-action review, the performance gaps are expressed clearly.[20]

Conclusion

Debriefing is the major component of simulation-based education. Debriefing models have been categorized as three-phase models, multiphase models, and other models and frameworks. The three-phase models include RUST, GAS, 3D, Diamond, and 3-R. Multiphase models include Mitchell's model, Four Es, GREAT, TeamGAINS, DEBRIEF, LEARN, DML, and PEARLS. The other debriefing models and frameworks include directive feedbacks, advocacy inquiry-focused facilitation, plus/delta, and after-action review.

Despite the critical importance of debriefing in simulation-based education, the lack of effective debriefing components and of guidelines indicating the best ways to conduct debriefing can result in numerous missed opportunities for learning. There is a need for tools that provide objective feedback and a collaboration between facilitators and participants. These tools should be linked to the evidence and learning outcomes that help improve the quality of debriefing. Studies investigating the role and effectiveness of knowledge in the learning process are increasing; however, there are no reliable and valid tools to assess the quality and effectiveness of debriefing. Further studies examining the reliability and validity of assessment tools used in debriefing are needed.[10]

References

1. Dismukes RK, Gaba DM, Howard SK. So Many Roads: facilitated debriefing in healthcare. *Simul Healthc.* 2006;1(1):23-25. **[Crossref]**
2. Reed SJ. Written debriefing: Evaluating the impact of the addition of a written component when debriefing simulations. *Nurse Educ Pract.* 2015;15(6):543-548. **[Crossref]**
3. Reierson IA, Haukedal TA, Hedeman H, Bjørk IT. Structured debriefing: What difference does it make? *Nurse Educ Pract.* 2017;25:104-110. **[Crossref]**
4. Pivec J, Renee J. Debriefing after Simulation: Guidelines for Faculty and Students. 2011. Available from: https://sophia.stkate.edu/ma_nursing/14
5. Mayvill ML. Debriefing: The essential step in simulation. *Newborn Infant Nurs Rev.* 2011;11(1):35-39. **[Crossref]**
6. Kolbe M, Grande B, Spahn DR. Briefing and debriefing during simulation-based training and beyond: content, structure, attitude and setting. *Best Pract Res Clin Anaesthesiol.* 2015;29(1):87-96. **[Crossref]**
7. Ha E. Attitudes toward video-assisted debriefing after simulation in undergraduate nursing students: an application of Q methodology. *Nurse Educ Today.* 2014;34(6):978-84. **[Crossref]**
8. Wickers MP. Establishing the climate for a successful debriefing. *Clin Simul Nurs.* 2009;6(3):83-86. **[Crossref]**
9. Cheng A, Grant V, Dieckmann P, Arora S, Robinson T, Eppich W. Faculty Development for Simulation Programs: Five İssues for The Future of Debriefing Training. *Simul Healthc.* 2015;10(4):217-222. **[Crossref]**
10. Shinnick MA, Woo M, Horwich T B, Steadman R. Debriefing: The most important component in simulation? *Clin Simul Nurs.* 2011;7(3):105-111. **[Crossref]**
11. Ali AA, Musallam E. Debriefing Quality Evaluation in Nursing Simulation-Based Education: An Integrative Review. *Clin Simul Nurs.* 2018;16:15-24. **[Crossref]**
12. Rudolph JW, Simon R, Rivard P, Dufresne RL, Raemer DB. Debriefing with Good Judgment: Combining Rigorous Feedback with Genuine Inquiry. *Anesthesiol Clin.* 2007;25(2):361-376. **[Crossref]**
13. INACSL Standards Committee. INACSL standards of best practice: Simulation^SM Debriefing. *Clin Simul Nurs.* 2016;12(S):21-25. **[Crossref]**
14. Rall M, Manser T, Howard, SK. Key Elements of Debriefing For Simulator Training. Eur J Anaesthesiol. 2009; 17(8), 516-517. **[Crossref]**
15. Reed SJ, Andrews CM, Ravert P. Debriefing Simulations: Comparison of Debriefing with Video and Debriefing Alone. *Clin Simul Nurs.* 2013;9(12):e585-e591. **[Crossref]**
16. Verkuyl M, Atack L, McCulloch T, et al. Comparison of Debriefing Methods after a Virtual Simulation: An Experiment. *Clin Simul Nurs.* 2018;19:1-7. **[Crossref]**
17. Alinier G, Oriot D. Pocket Book for Simulation Debriefing in Healthcare. Springer International Publishing. 2018. pp: 1-29.
18. Glesmann SA, Kastner A, Venteivher M. Evaluating Debriefing Methods For High Fidelity Simulation, An Evidence Based Project, Nebraska Methodist College Department of Nursing Omaha, Nebraska, 2016.
19. Wang EE, Kharasch M, Kuruna D. Facilitative debriefing techniques for simulation-based learning. *Acad Emerg Med.* 2011;18(2):e5. **[Crossref]**
20. Sawyer TL, Deering S. Adaptation of the US Army's after-action review for simulation debriefing in healthcare. *Simul Healthc.* 2013;8(6):388-397. **[Crossref]**
21. Zigmont JJ, Kappus SJ, Sudikoff SN. The 3D Model of Debriefing: Defusing, Discovering, and Deepening. *Semin Perinatol.* 2011;35(2):52-58. **[Crossref]**
22. Jaye P, Thomas L, Reedy G. The Diamond: A Structure for Simulation Debrief. *Clin Teach.* 2015;12(3):171-175. **[Crossref]**
23. ICISF. International critical incident stress foundation. 2017. Avaiblable from: https://www.icisf.org/.
24. Mitchell JT, Everly GS. The basic critical incident stress management course: Basic group crisis intervention (3rd ed.). Ellicott City, MD: International Critical Incident Stress Foundation. 2001.
25. Owen H, Follows V. GREAT simulation debriefing. *Med Educ.* 2006;40(5):488-489. **[Crossref]**
26. Kolbe M, Weiss M, Grote G, Knauth A, Dambach M, Spahn DR. TeamGAINS: A tool for structured debriefings for simulation-based team trainings. *BMJ Qual Saf.* 2013;22:541-553. **[Crossref]**
27. Sigalet E. The LEARN Framework. Memorial University-Faculty of Medicine. 2017. Avaiblable from: http://www.med.mun.ca/TSRC/Cureus/LEARN.aspx.
28. Dreifuerst KH. Getting started with debriefing for meaningful learning. *Clin Simul Nurs.* 2015;11(5):268-275. **[Crossref]**
29. Eppich W, Cheng A. Promoting Excellence and Reflective Learning in Simulation (PEARLS): Development and rationale for a blended approach to health care simulation debriefing. *Simul Healthc.* 2015;10(2):106-115. **[Crossref]**
30. Fanning RM, Gaba DM. The role of debriefing in simulation-based learning. *Simul Healthc.* 2007;2(2):115-125. **[Crossref]**
31. Klair M. The mediated debrief of problem flights. In: Dismukes K, Smith G (eds) Facilitation and debriefing in aviation training and operations. Ashgate, Aldershot, 2000; p. 72-92.