Debriefing methods and techniques used in nursing simulation

Métodos e técnicas de debriefing utilizados em simulação na enfermagem

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ABSTRACT
Objective: To identify in the literature methods and techniques of debriefing used in teaching and learning in nursing simulation.

Methods: Integrative review of PubMed/MEDLINE®, LILACS, Scopus and CINAHL® databases, with the descriptors "nursing", "nursing education", respective terms in English and Spanish, and the keyword "debriefing". Twelve primary studies, in Portuguese, English and Spanish, from January 2008 to December 2018 were included. Qualitative analysis was used to categorize the domains.

Results: The identified meaningful learning methods were based on principles of transfer of learning; model of clinical reasoning; interprofessional, with good judgment and structured and self-debriefing techniques, oral, eye-tracking, video-assisted and written debriefing.

Conclusions: The structured method and the oral technique with video were outstanding. One method was not superior to the other but effective for a particular proposal. No national studies have been found. Research should be conducted on the effectiveness of nursing debriefing methods and techniques.

Keywords: Nursing. Education, nursing. Debriefing. Educational technology. Simulation.

RESUMO
Objetivo: Identificar na literatura métodos e técnicas de debriefing utilizados no processo de ensino e aprendizagem na simulação em enfermagem.


Resultados: Identificaram-se os métodos de debriefing Meaningful Learning; based on principles of transfer of learning; model of clinical reasoning, interprofessional, com bom julgamento e estruturado, e técnicas self-debriefing; oral; Eye-Tracking; videoassistido e redação de informes.

Conclusões: Sobressaíram-se o método estruturado e a técnica oral com vídeo. Um método não foi superior ao outro, mas eficaz para determinada proposta. Não foram encontrados estudos nacionais. Sugere-se, pesquisas sobre a eficácia dos métodos e técnicas de debriefing na enfermagem.


RESUMEN
Objetivo: Identificar en la literatura los métodos y técnicas de análisis utilizados en el proceso de enseñanza y aprendizaje en la simulación de enfermería.


Resultados: Se identificaron los métodos de análisis significativo de información; Basado en principios de transferencia de aprendizaje; modelo de razonamiento clínico, interprofesional, bien juzgado y estructurado, y técnicas de autoinforme; oral; Seguimiento de los ojos; video asistido y redacción de informes.

Conclusiones: Se destaca el método estructurado y la técnica oral con video. Un método no era superior a otro, pero era efectivo para una propuesta dada. No se encontraron estudios nacionales. Se sugiere, investigación sobre la efectividad de los métodos y técnicas de interrogatorio en enfermería.


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**INTRODUCTION**

The increasing complexity of health systems and greater awareness of user rights have forced nurses to adapt to this scenario\(^{11}\). Simulation in initial and continuing nursing education to support teaching and learning is currently considered one of the best ways to improve the capacity to reflect and reason clinically and develop competencies\(^{9}\).

Simulation is an active teaching and learning strategy whereby students actively participate in scenarios that mimic real-life situations and consequently engage in reflective practices, divided into three phases, namely preparation, participation and debriefing\(^{12−14}\). Consequently, it is fundamental to encourage discussion on debriefing methods and techniques used for simulation in nursing. Thus, the objective of this integrative review is to identify in the literature debriefing methods and techniques used for teaching and learning in nursing simulation.

**METHODS**

This is an integrative literature review within the scope of nursing simulation on debriefing methods and techniques employed in the teaching and learning process.

The steps of the integrative review were selection of the review question, definition of the sample, definition of the primary research characteristics, analysis of the findings, interpretation of the results and reproduction of the review\(^{15}\).

The searches were carried out from May to July 2018 using the PICO (patient, intervention, comparison, outcomes) strategy\(^{16}\), to describe the following elements: “P” referred to students and nursing professionals; “I” referred to application of the debriefing methods and techniques; “C” was not applied in this review and “O” referred to nursing education. The research question was the following: What scientific evidence is available in the literature regarding debriefing methods and techniques that enable nursing education? The following databases were consulted: PubMed/MEDLINE®, Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS), Scopus and Cumulative Index to Nursing and Allied Health Literature (CINAHL). Descriptors and keywords were used to conduct the studies search. The health sciences descriptors (DeCS) were “enfermagem” and “educação em enfermagem” in addition to their English language equivalents - “nursing” and “nursing education” - in the Medical Subjects Headings (MESH). The term “debriefing” was used as a keyword to increase specificity on the theme during the search. Two independent researchers simultaneously conducted the search in the selected databases using the same combination of terms. Chart 1 describes the search strategies used in the databases.

We included primary studies that responded the question regarding debriefing methods and techniques that enable nursing education published from January 2008 to December 2018 – a temporal profile justified by an emphasis on transformational pedagogical practices established in the national curriculum guidelines of the referred period\(^{17}\). Articles published in Portuguese, English and Spanish in scientific journals and available electronically were considered for the review. Literature reviews, editorials, overviews, experience reports, case studies, theoretical reflections, dissertations, theses, monographs and abstracts published in annals of events were excluded.
Data were collected using the instrument proposed by Ursi and Galvão (18), as follows: identification of the article (title, study number, authors, level of evidence, place and year of publication), methodological design, and information on the presented debriefing methods and techniques. The proposal of Melnyk et al. (19) was used to classify the level of evidence of the studies. Two reviewers independently assessed the studies and any disagreements were forwarded to a third reviewer who specializes in the field to reach an agreement. The bibliographical reference manager EndNote Basic was used to organize the records found in the searches (20). The path of study selection was presented in the flowchart proposed in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (21) (Figure 1).

In the descriptive analysis, the articles were read in full and the findings were categorized into two domains, namely debriefing methods, addressing the structural models used in nursing, and debriefing techniques, focusing on the strategies that enable the process. The largest number of studies was identified in the PubMed database, configuring 479 articles, followed by the Scopus base, with 401 studies. In the CINAHL database, 312 articles were found, in LILACS, 6, and in the Web of Science, 5 articles were found.

<table>
<thead>
<tr>
<th>Data analysis</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PubMed/MEDLINE®</td>
<td>Debriefing AND (Nursing OR Nursings) AND (“Education, Nursing” OR “Nursing Education” OR “Educations, Nursing” OR “Nursing Educations”)</td>
</tr>
<tr>
<td>SCOPUS</td>
<td>Debriefing AND (Nursing OR Nursings) AND “Education, Nursing” OR “Nursing Education” OR “Educations, Nursing” OR “Nursing Educations”</td>
</tr>
<tr>
<td>CINAHL</td>
<td>Debriefing AND Nursing AND “Education, Nursing”</td>
</tr>
<tr>
<td>LILACS</td>
<td>Debriefing AND (Nursing OR Enfermagem OR Enfermería) AND (“Education, Nursing” OR “Educação em Enfermagem” OR “Educación, Enfermería”)</td>
</tr>
<tr>
<td>Web of Science</td>
<td>Debriefing AND (Nursing OR Nursings) AND (“Education, Nursing” OR “Nursing Education” OR “Educations, Nursing” OR “Nursing Educations”)</td>
</tr>
</tbody>
</table>

**Chart 1** – Search strategies used in the databases selected for the study

Source: Authors.

CINAHL: Cumulative Index to Nursing and Allied Health Literature; LILACS: Literatura Latino-Americana e do Caribe em Ciências da Saúde.

**Figure 1** – Flowchart of the process of identification, selection and inclusion of studies, as recommended in PRISMA.

Source: Search data, 2018, based on Moher et al. (21)
RESULTS

Thirteen primary studies were eligible for the final sample of this review. Charts 2 to 4 show the authors of the studies included in the review, country of origin of the study, classification of the level of evidence, design of the studies, methods and techniques of debriefing used in the nursing simulation and its lead authors.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Level of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kang et al.</td>
<td>South Korea</td>
<td>III</td>
</tr>
<tr>
<td>Reed</td>
<td>USA</td>
<td>II</td>
</tr>
<tr>
<td>Dreifuerst</td>
<td>USA</td>
<td>III</td>
</tr>
<tr>
<td>Johnston et al.</td>
<td>Australia</td>
<td>II</td>
</tr>
<tr>
<td>Kuiper et al.</td>
<td>USA</td>
<td>VI</td>
</tr>
<tr>
<td>Poore et al.</td>
<td>USA</td>
<td>VI</td>
</tr>
<tr>
<td>Reierson et al.</td>
<td>Norway</td>
<td>V</td>
</tr>
<tr>
<td>Mariani et al.</td>
<td>USA</td>
<td>V</td>
</tr>
<tr>
<td>Mariani et al.</td>
<td>USA</td>
<td>III</td>
</tr>
<tr>
<td>Grant et al.</td>
<td>USA</td>
<td>II</td>
</tr>
<tr>
<td>Ha</td>
<td>South Korea</td>
<td>VI</td>
</tr>
<tr>
<td>Henneman et al.</td>
<td>USA</td>
<td>II</td>
</tr>
<tr>
<td>Maestre et al.</td>
<td>Spain</td>
<td>V</td>
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</table>

Chart 2 – Selected studies, country of origin and classification of the level of evidence
Source: Research data, 2018.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Outline</th>
<th>Debriefing method and lead authors</th>
</tr>
</thead>
</table>
| Johnston et al.    | Pilot study, randomized clinical, controlled with mixed approach, which tested debriefing using the principles of learning transfer theory | Debriefing based on principles of transfer of learning
Lead author: Salomon et al. |
| Kuiper et al.      | Descriptive study reporting experiences with nursing students and comparing their ability to develop clinical reasoning supported by debriefing | Debriefing using the OPT model of clinical reasoning
Lead author: Kuiper et al. |
| Poore et al.       | Methodological study, validation and application of debriefing tool    | Interprofessional debriefing (DIPRR)
Lead author: Poore et al. |
| Reierson et al.    | Exploratory qualitative study conducted with nursing students, with traditional oral debriefing and structured debriefing associated with video recording | Structured debriefing
Lead authors: Fanning et al. and Phrampus et al. |
| Mariani et al.     | A descriptive, qualitative pilot study on structured debriefing        | Structured debriefing
Lead authors: Fanning et al. and Phrampus et al. |

Chart 3 – Outlines and debriefing method identified in the articles, with their respective leading authors
### Chart 3 – Cont.
Source: Research data, 2018.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Outline</th>
<th>Debriefing method and lead authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mariani et al&lt;sup&gt;(28)&lt;/sup&gt;</td>
<td>Mixed method quasi-experimental study with structured debriefing</td>
<td>Structured debriefing Lead authors: Fanning et al.&lt;sup&gt;(35)&lt;/sup&gt; and Phrampus et al.&lt;sup&gt;(36)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Maestre and Rudolph&lt;sup&gt;(32)&lt;/sup&gt;</td>
<td>Descriptive study, with a qualitative approach, on the principles of debriefing with good judgment</td>
<td>Debriefing with good judgment Lead author: Maestre et al.&lt;sup&gt;(32)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Dreifuerst&lt;sup&gt;(33)&lt;/sup&gt;</td>
<td>Quasi-experimental study, with pre-test and post-test application to investigate the development of clinical reasoning in students through debriefing</td>
<td>Debriefing for Meaningful Learning© Lead author: Dreifuerst&lt;sup&gt;(33)&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

### Chart 4 – Outlines and debriefing techniques identified in the articles, with their respective lead authors
Source: Research data, 2018.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Outline</th>
<th>Debriefing techniques and lead authors</th>
</tr>
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<tbody>
<tr>
<td>Kang et al&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>Quasi-experimental study comparing debriefing techniques</td>
<td>Auto-debriefing (self-debriefing) technique Unknown author Oral debriefing technique alone Lead author: Fanning et al.&lt;sup&gt;(35)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Reed&lt;sup&gt;(12)&lt;/sup&gt;</td>
<td>Experimental study comparing student experiences applying three debriefing techniques</td>
<td>Oral debriefing technique alone Lead author: Fanning et al.&lt;sup&gt;(35)&lt;/sup&gt; Oral debriefing technique associated with written debriefing recorded in a blog or collaborative debriefing Lead author: Petranek&lt;sup&gt;(37)&lt;/sup&gt; Oral debriefing technique associated with written debriefing recorded in journal or journaling Lead author: Petranek&lt;sup&gt;(37)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Grant et al&lt;sup&gt;(29)&lt;/sup&gt;</td>
<td>Study based on the Q methodology, which integrated quantitative and qualitative methods to identify perception in relation to the applied debriefing technique</td>
<td>Video-assisted debriefing technique Lead author: Grant et al.&lt;sup&gt;(29)&lt;/sup&gt; Levett-Jones et al.&lt;sup&gt;(38)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ha&lt;sup&gt;(40)&lt;/sup&gt;</td>
<td>Quasi-experimental study comparing the oral debriefing technique associated with oral debriefing video alone</td>
<td>Oral debriefing technique alone Lead author: Fanning et al.&lt;sup&gt;(35)&lt;/sup&gt; Video-assisted debriefing technique Lead author: Grant et al.&lt;sup&gt;(29)&lt;/sup&gt;</td>
</tr>
<tr>
<td>Henneman et al&lt;sup&gt;(31)&lt;/sup&gt;</td>
<td>Experimental study with pre-and post-test application to compare the efficacy of three debriefing techniques and determine the most effective</td>
<td>Oral debriefing techniques alone Lead author: Fanning et al.&lt;sup&gt;(35)&lt;/sup&gt; Eye-tracking debriefing technique alone Lead author: Fisher et al.&lt;sup&gt;(39)&lt;/sup&gt; Oral debriefing technique combined with eye-tracking Lead author: Fisher et al.&lt;sup&gt;(39)&lt;/sup&gt;</td>
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DISCUSSION

The low number of studies that composed this review reveals that research on the most appropriate debriefing methods and techniques for nursing simulation may still be in the early stages. The main methods identified were meaningful learning debriefing; debriefing based on principles of transfer of learning; debriefing model of clinical reasoning and interprofessional debriefing, debriefing with good judgment and structured debriefing.

Meaningful learning debriefing uses "Socratic questioning" whereby the teacher does not directly answer students' questions but responds with a series of questionings that allow students to decide on the best answer, triggering reflection on the clinical practice(33).

Debriefing based on principles of transfer of learning addresses the ability to generalize the skills learned and project them into real experiences, thus allowing students to use past experiences or future situations to make meaningful the scenarios proposed in the simulation(23).

The debriefing method model of clinical reasoning (OPT) promotes reflection among students through the comparison of the patient's current clinical status and the desired clinical status and focuses on identifying and assessing nursing diagnoses(24).

Interprofessional debriefing, on the other hand, is used in nursing to address teamwork in a way that values knowledge of the patient's current clinical status and the desired clinical status and focuses on identifying and assessing nursing diagnoses(24).

Interprofessional debriefing, on the other hand, is used in nursing to address teamwork in a way that values knowledge of the patient's current clinical status and the desired clinical status and focuses on identifying and assessing nursing diagnoses(24).

It was noted, however, that the structured debriefing method is commonly used in teaching and learning in nursing, chiefly based on two styles of structured reflection: three-phase structures, composed of debriefing divided into 3 distinct phases and multiphasic structures, consisting of more than three phases for reflection(40).

In nursing, the three-phase debriefing structures are more common than the multiphasic structures(40), corroborating the findings of this review, in which three-phase debriefing models were also identified. The most commonly used three-phase structured debriefing model was developed by Rudolph et al., characterized by the steps of reaction, analysis and synthesis(8,40), which were identified in this review. In this structured debriefing model, the reaction phase allows participants to release emotions and tensions, the analysis phase addresses the exposure of events, discussion and articulation with the literature and the synthesis phase consists of reviewing the lessons learning and presenting the objectives, positive aspects and points of improvement(3,38,41).

The need to express emotions and remain calm during the reaction phase is fundamental for learning to occur in the simulation since this process causes anxiety and stress in the participants and clouds their judgment and reasoning ability(42).

The phases of analysis and synthesis, in turn, promote reflection, which is crucial in learning because it modifies behaviors due to the acquired knowledge and interpretation of the experienced situations(43). Studies have identified that nursing students who participate in structured debriefing and synthesize all the components of a simulated experience in a context they consider meaningful(2,26) find it easier to reflect assertively and comprehensively, develop critical thinking and the ability to integrate new information and improve their clinical judgment ability(26). Today, the body of evidence that evaluates debriefing methods is increasing although a given method is usually chosen according to the personal preference of the facilitator without regard for the context and the objectives(46). Regardless of the preferred debriefing style, conducting a phase-organized reflection session with clear and precise learning objectives is an extremely difficult task for the mediator teacher due to the challenge of dealing with the unexpected, converting difficulties into achievements and achieving meaningful learning(44–45).

Because simulations have a variety of contexts and objectives, the educational value and impact of debriefing depend on this intentionality, and specific methods can be useful in a proposed situation, indicating that one method is not superior to the other but only more effective to achieve a given goal(46).

With regard to exploring the most common debriefing techniques for nursing simulations, the identified techniques were self-debriefing; eye-tracking debriefing; written debriefing; oral debriefing and video-assisted debriefing.

In self-debriefing, participants debrief without the help of a facilitator or instructor(33). A more complex technique than self-debriefing is eye tracking, which consists of ocular tracking technology that captures the participants' movements during the simulated scene and highlights behavior that guides and facilitates debriefing(39). In the written debriefing technique, participants use an electronic device to write descriptions of their observations and reports, among other topics, on a blog, individually or jointly(39).
Emphasis was given on oral debriefing associated with the video-assisted debriefing. Two studies, conducted with nursing students\(^{37}\) and health workers\(^{38}\) did not identify statistically significant differences between the two techniques regarding the performance of those involved, suggesting nursing educators can use either technique to achieve learning outcomes in the simulation\(^{40}\).

A study addressing such techniques, conducted with nursing students to determine the effects of debriefing technique on the reduction of psychophysiological stress of participants in a simulation, did not find a significant difference for such responses\(^{49}\).

An integrative review of the best available scientific evidence regarding video-assisted debriefing compared to the oral debriefing technique found 14 studies involving the subject\(^{50}\) and the authors concluded that the results of these publications are highly heterogeneous regarding the efficacy of video-assisted debriefing. Moreover, the level of evidence of the publications suggests the elaboration of more consistent studies related to the debriefing structure, to the study design and to the description of randomization\(^{50}\). Therefore, further scientific research should be conducted regarding the efficacy of video-assisted debriefing, which is often cited as the gold standard compared to oral debriefing, with the configuration of empiricism as to the evidence of educational benefits when associating both techniques\(^{50}\). The incipient results without statistical significance in most of the included studies were considered a limitation in this study, although almost all the studies had representative samples of their populations and revealed other characteristics, such as the satisfaction of participants with the methods or techniques addressed.

**CONCLUSION**

The main debriefing methods used for teaching and learning in nursing are meaningful learning, based on transfer of learning principles, using the outcome-present state-test, interprofessional, with good judgment and structured. The most frequently used debriefing techniques were oral, oral associated with video-assisted, with eye-tracking, writing and self-debriefing. Of these techniques, structured debriefing and the association of the oral technique and video-assisted debriefing were highlighted. One method was not superior to the other, but more effective in achieving a given proposal. This integrative review contributed to teaching, research and care in nursing by synthesizing knowledge regarding debriefing methods and techniques with a focus on simulation and by facilitating the choice of professors in nursing and nurses regarding the best practices for planning and conducting debriefing. We did not find Brazilian studies that tested debriefing methods and techniques. Consequently, further studies should be conducted to compare the efficacy of debriefing methods and techniques in nursing simulation and explore new approaches.

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