

IMPLICATIONS OF THE USE OF SOUND AND IMAGE IN THE EVALUATION OF DEBRIEFING

IMPLICAÇÕES DO USO DE SOM E IMAGEM NA AVALIAÇÃO DE DEBRIEFING

IMPLICACIONES DEL USO DE IMAGEN Y SONIDO EN LA EVALUACIÓN DEL DEBRIEFING

-  Alessandra Mazzo ¹
-  Juliana Constantino Franzon ¹
-  Mateus Henrique Gonçalves Meska ¹
-  Giovanna Cristina Conti Machado ¹
-  Verónica Rita Dias Coutinho ²
-  Gerson Alves Pereira Júnior ³

¹ Universidade de São Paulo – USP, Escola de Enfermagem de Ribeirão Preto, Departamento de Enfermagem Geral e Especializada. Ribeirão Preto, SP – Brazil.

² Escola Superior de Enfermagem de Coimbra, Enfermagem Médico-Cirúrgica. Coimbra – Portugal.

³ USP, Faculdade de Odontologia de Bauru, Curso de Medicina. Bauru, SP – Brazil

Corresponding author: Juliana Constantino Franzon
E-mail: juliana.franzon@usp.br

Author's Contributions:

Conceptualization: Alessandra Mazzo, Juliana C. Franzon, Gerson A. Pereira Junior; **Data Collect:** Alessandra Mazzo, Juliana C. Franzon, Mateus H. G. Meska, Gerson A. Pereira Junior; **Investigation:** Alessandra Mazzo, Juliana C. Franzon, Gerson A. Pereira Junior; **Methodology:** Alessandra Mazzo, Juliana C. Franzon, Gerson A. Pereira Junior; **Project Management:** Alessandra Mazzo, Gerson A. Pereira Junior; **Statistical analysis:** Alessandra Mazzo, Juliana C. Franzon, Mateus H. G. Meska, Gerson A. Pereira Junior; **Supervision:** Alessandra Mazzo, Gerson A. Pereira Junior; **Validation:** Alessandra Mazzo, Juliana C. Franzon, Mateus H. G. Meska, Giovanna C. C. Machado, Gerson A. Pereira Junior; **Visualization:** Alessandra Mazzo, Mateus H. G. Meska, Giovanna C. C. Machado, Gerson A. Pereira Junior; **Writing - Preparation of the original:** Alessandra Mazzo, Juliana C. Franzon, Mateus H. G. Meska, Giovanna C. C. Machado, Verónica R. D. Coutinho, Gerson A. Pereira Junior; **Writing - Revising and Editing:** Alessandra Mazzo, Juliana C. Franzon, Mateus H. G. Meska, Giovanna C. C. Machado, Verónica R. D. Coutinho, Gerson A. Pereira Junior.

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ABSTRACT

Objective: identify the implication of the application of sound and image resources in the evaluation of debriefing. **Method:** a quantitative and experimental study that includes undergraduate nursing students aged 18 years and over, randomized by intervention group (participation in debriefing with the use of sound and image) or control group (participation in debriefing without the use of sound and image), carried out at a nursing school in the interior of São Paulo during a workshop simulated, where the students participated in a simulated hi-fidelity scenario. For the data collection, the sociodemographic characterization instrument was used, the Debriefing Experience Scale and the Debriefing Evaluation associated with Simulation. For analysis of the data, we used exploratory statistics, with frequency, percentage, reliability test, sample analysis and comparison test of means. **Results:** 100 undergraduate students in Nursing participated in this study. High values were determined for the evaluation of debriefing and emphasized the importance of the role of the facilitator. However, no significant results were observed for the evaluation of debriefing when adding a video review. **Conclusion:** these results highlight the importance of reflection during education based on clinical simulation and suggest that efficient simulation education can be achieved in the debriefing even when video technology is not available.

Keywords: Patient Simulation; Video-Audio Media; Educational Measurement.

RESUMO

Objetivo: identificar a implicação da aplicação de recursos de som e imagem na avaliação de debriefing. **Método:** estudo quantitativo e experimental que inclui estudantes de graduação em Enfermagem com 18 anos ou mais, alocados de forma randomizada por grupo-intervenção (participação em debriefing com o uso de som e imagem) ou grupo-controle (participação em debriefing sem o uso de som e imagem), realizado em uma escola de Enfermagem do interior de São Paulo durante um workshop simulado, onde os alunos participaram de um cenário simulado de alta fidelidade. Para a coleta de dados foi utilizado o instrumento de caracterização sociodemográfica, a Escala de Experiência de Debriefing e a Avaliação de Debriefing associada à Simulação. Para análise dos dados foi utilizada estatística exploratória, com análise de frequência, porcentagem, teste de confiabilidade, análise amostral e teste de comparação de médias. **Resultados:** participaram deste estudo 100 estudantes de graduação em Enfermagem. Apuraram-se valores elevados para a avaliação de debriefing e ressaltou-se a importância do papel do facilitador. No entanto, não se observaram resultados significativos para a avaliação de debriefing ao adicionar uma revisão de vídeo. **Conclusão:** estes resultados destacam a importância da reflexão durante a educação com base na simulação clínica e sugerem que a educação eficiente com simulação pode ser alcançada no debriefing mesmo quando a tecnologia de vídeo não está disponível.

Palavras-chave: Simulação de Paciente; Mídia Audiovisual; Avaliação Educacional.

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RESUMEN

Objetivo: identificar la implicación del uso de recursos de imagen y sonido en la evaluación del debriefing. **Método:** estudio cuantitativo experimental que incluye estudiantes de grado de enfermería con 18 años o más, asignados aleatoriamente por grupo de intervención (participación en debriefing usando imagen y sonido) o grupo control (participación en debriefing sin imagen ni sonido) realizado en una escuela de enfermería del interior de San Pablo durante un taller simulado, donde los alumnos participaron de un escenario simulado de alta fidelidad. Para la recogida de datos se utilizó el instrumento de caracterización sociodemográfica, la Escala para la Evaluación del Debriefing y la Evaluación del Debriefing asociada a la simulación. Se realizó el análisis exploratorio de datos, con análisis de frecuencia, porcentaje, prueba de confiabilidad, análisis de la muestra y prueba de comparación de promedios. **Resultados:** participaron 100 estudiantes de grado de enfermería. Valores elevados para la evaluación del debriefing y realizaron la importancia del rol del facilitador. No se observaron valores significativos para la evaluación del debriefing al agregar la revisión de vídeo. **Conclusión:** los resultados muestran la importancia de la reflexión durante la educación y sugieren que la educación eficiente es factible con simulación en el debriefing aún no estando disponible la tecnología de vídeo.

Palabras clave: Simulación de Paciente; Medios Audiovisuales; Evaluación Educacional.

INTRODUCTION

The simulation is used in teaching for the training of technical, cognitive and attitudinal skills. It allows the student to use manikins for training of invasive procedures and in the simulations of high fidelity reproduces scenarios very close to the clinical reality, offering to the student the experience of daily work situations, skills training, interprofessional interaction, communication with the patient, reasoning clinical and decision making, among others.^{1,2}

For the training of health professionals, the clinical simulation model used in education is generally divided into three phases. In the first one, called *pre-briefing* and *briefing*, there is interaction between the facilitator and the student. This phase can be described as the orientation session held prior to the commencement of a simulation-based learning experience whose instructions or preparatory information are given to the participants. It is a critical element in the design of scenarios and student involvement. At this stage the establishment of standards, policies and protocols, discussion of expectations of the student's role (s), which makes the intended learning outcomes transparent, introduction to the adjustment equipment and simulation and definition of the rules for the debriefing. The term *pre-briefing* is usually used specifically to describe additional preparatory activities to enhance simulation-based learning.³ The second phase of the simulation is characterized by the development of a simulated scenario in which the student de-

velops situations that approximate real professional practice. And the third, the debriefing, is the stage in which students reflect on their actions and interactions with the scenario.³

Seen as a critical point for participant learning, the debriefing phase has been considered fundamental in the development of clinical scenarios. Its main purpose is to learn from the experience of a given situation. The debriefing is guided by a facilitator who seeks to explore and understand the relationships between events, actions, thought processes and feelings, as well as the performance results of participants in the simulation.^{2,4}

The debriefing was often practiced and conducted in the military and aeronautical domains, where it aimed to allow the expression of feelings and emotions in crisis situations and after the execution of a certain mission. With the development of technology and the use of clinical simulation in health, the debriefing started to be used as one of the main stages of the teaching method, complementing the simulation itself. Its main purpose is to attenuate the emotional response, correct decisions and actions, allowing to discuss the attitudes made in the teaching-learning activity, which minimizes risks and complications with the patients in the hospital. In addition, it promotes participants' reflective practice regarding their emotions and actions.²

With the growing understanding of the importance of reflections in teaching-learning practices, more and more information and clarification tools such as debriefing nESD to be practiced. Three attitudes are highlighted and considered vital for an effective debriefing: honesty, curiosity and safe training of skills. These attitudes are incorporated into training based on simulation or even clinical context. And they result in better performance in teamwork and quality patient care.¹

The literature shows a plethora of models in the search for the best way to perform the debriefing. In general, the debriefing prescribe a defined sequence of phases that must be followed, that is, the participants' actions during the simulation should be described at the conceptual stage; the experience and the performance of the students should be analyzed, and the discussion should consider how the learning can be applied in the professional reality. While conducting debriefing, questions are asked that influence the students' reflection and learning, and a brief reflection is made on the immediate emotions felt by the participant who experienced the simulation. In addition, it is recommended to describe the objectives of the scenario, the positive points of the student's performance in the scenario or how the team developed the scenario, their reflections on and for the action and how they could have acted to improve the activities, considering the structured thinking and the implications of these actions. The debriefing facilitator requires prior knowledge of the content taught and driving skills to encourage students to reflect on their behaviors and feelings during the simulation, keeping in mind the defined learning objectives.^{1,5,6}

For the proper conduction of the activity, it is also recommended a calm, comfortable physical space that provides a horizontal conversation between facilitators and students. These are factors that favor performances of the participants and the use of technological resources of sound and image that make possible the review of the activity and a guided reflection on the use of recorded scenes.¹ The utilization of audiovisual media for educational purposes, especially in clinical simulation, with high fidelity scenarios has been a concern for educational institutions, due to the inconvenience of cost and use logistics.⁵

The use of sound and image resources helps students to learn and has the good points of providing discussions and reflections on the actions performed by participants, indicating what actions could have been taken to improve performance during simulated clinical practice. It allows the identification of less positive attitudes and procedures and potentiates the correct answers, increasing confidence and developing coping and communication skills.^{5,7}

The video on debriefing can be used by the facilitator as an alert in order to identify situations that he / she deems necessary to demonstrate the recording, when the attention of the students is diverted or there was no appreciation of that moment of decision or performance. The quality of the footage is important because the low quality of the footage and the prolonged visualization of a recording can diminish the interest of the student in the debriefing and impact on knowledge scores, since the oral discussion time is taken to execute the video, minimizing the time of the facilitator to instigate the students to provide constructive opinions.⁷

Review simulation experiences through videos during the debriefing allows students to reflect, recognizing assertive behaviors and improving them, in order to allow corrections.⁸ In addition, the documentation in videos allows the analysis of the results in order to provide the student's progress in the simulated skills and scenarios,¹ which can be an interesting tool in the evaluation processes. However, investing in sound and imaging resources is costly.

In this context, this study has as objective to identify the implications of the use of sound and image in the evaluation of the debriefing.

METHODOLOGY

Quantitative and experimental study carried out with undergraduate Nursing students from several schools, regularly enrolled, over 18 years of age, who had or had no clinical experience in teaching activities, regardless of the course period, and who developed all the activities proposed in the project. There was no sample loss.

DATA COLLECTION INSTRUMENTS

To collect data were used: a) sociodemographic characterization of the subjects; b) the Experience Scale with Debriefing (ESD)⁹ translated and validated into the Portuguese language.⁹ It is a five-point Likert type instrument, divided into four subcategories: i) analyzing thoughts and feelings; ii) learning and making connections; iii) the teacher's ability to conduct the debriefing; iv) appropriate teacher orientation, which aims to measure students' experience in the debriefing. The following were also used: c) Evaluation Scale of Debriefing associated with Simulation (ESDaS).⁶ ESDaS⁶ consists of a 34-item Likert five-point instrument, built in the Portuguese language, divided into the psychosocial, affective and cognitive dimensions.

DEVELOPMENT OF THE STUDY

The study was developed during the offering of a workshop simulated at the *Escola de Enfermagem de Ribeirão Preto (EERP) da Universidade de São Paulo (USP)*. The event was held on a four-hour day. The workshop was disseminated to students in an online form, on the web page of the institution where it was performed and had as its central theme "nursing care for the hospitalized clinical patient". To all those enrolled one week before the activity, theoretical study material (texts, exercises, video lessons) was sent for a preliminary study on the themes to be addressed at the event.

Registration for the event was free. During the in-person activities of the workshop, the students were invited to participate in the study. The refusal to participate in the research did not exclude participants from carrying out the workshop activities, however, there was no refusal.

The students participated in a theoretical discussion and skill training before being submitted to the activity in a simulated high-fidelity scenario (nursing care to the ascitic patient in respiratory discomfort that resulted in vomiting), in groups of 15 students; and subsequently held their respective debriefing. For the students who waited for the simulated activity of high fidelity, laboratories were available for training of skills. The scenario was built, tested and validated before its application by a group of experts. There was 100.0% agreement among the experts.¹⁰

For the development of the research, the students were distributed in two groups randomly: a) control group – students who developed the debriefing of simulated high fidelity scenario in the presence of the facilitator without the use of sound and image resources; b) intervention group - students who developed the debriefing of the simulated high fidelity scenario in the presence of the facilitator with the use of sound and image resources. The same facilitator participated in both groups. The debriefing was developed in a structured way.¹¹ The students participated in the simulated scenario in groups with

15 students. The control and intervention groups participated in the activity alternately. First, the control group participated in the activity, later the intervention group, and so on.

The sound and image resources used were a 360° camera fixed to the ceiling of the environment, lapel microphones for all participants in the simulation scenario, as well as a microphone of shotgun type to capture the ambient audio. A sound recording desk, a computer for storing the videos and a television for playback of the scenes recorded in the clinical simulation were also used during the debriefing with the participants.

For the recording of the scenes were stipulated six critical points of the scenario: a) student communication with the patient; b) approach to the dyspnea complaint; c) clinical evaluation of the patient; d) episode of vomiting of the patient (distractor attributed to the scenario); e) nursing intervention (oxygen therapy); f) reassessment of the patient. During the debriefing with the facilitator's help, the participants presented the critical points mentioned in order to highlight the posture and procedures performed by the students.

DATA PROCESSING AND ANALYSIS

The survey data was encoded and double typed into Excel application spreadsheets Excel, exported and analyzed in Statistical Package for Social Science (SPSS), version 23 (Windows). The ESD responses⁹ were scored from one to five and grouped into the four subdimensions proposed by the authors. ESDaS responses were ranked in five points and grouped into the cognitive, psychosocial and affective dimensions.⁶

ETHICAL PROCEDURES

This study was submitted to the Comitê de Ética em Pesquisa da EERP and approved under Opinion 294.206. *Termo de Consentimento Livre e Esclarecido* (TCLE) was used.

RESULTS

100 undergraduate nursing students participated in this study. Among them, 90 (90.0%) were female and 10 (10.0%) were male. As for age, the minimum was 18 years, the maximum of 48 years, the average of 24 years, the fashion of 21 years and the median of 22 years.

Among the students, 23 (23.0%) attended the first year of the course; 21 (21.0%) attended the 2nd year of the course; 25 (25.0%) attended the 3rd; 18 (18.0%) attended the 4th year; and 13 (13.0%) attended the last year of the course.

Regarding previous experiences in teaching laboratories, 80 (80.0%) of the subjects in the sample had participated in laboratory practices, 59 (59.0%) had already participated in a

simulated scenario. When asked to assign a concept (zero to 10) to the activity, one (1%) assigned grade 2, two (2.0%) attributed 5.00 to 7.5 and 97 (97.0%) attributed 8, 0 to 10.

For the debriefing evaluation, the *Experience Scale with Debriefing* was used (ESD)⁹ and the Debriefing Assessment Scale associated with Simulation (ESDaS).⁶ The two instruments showed high reliability of the obtained data (ESD⁹ α = 0,894 e ESDaS⁶ α = 0,802).

Tables 1 and 2 demonstrate the distribution of the subjects according to the responses on the factors of the ESD scales⁹ and ESDaS⁶ scales, respectively. As shown in Table 1 (ESD)⁹, in the averages the lowest values attributed to the experiences with the debriefing are related to factor 4 – appropriate teacher orientation (4,48); and the highest attributed values were pertinent to factor 2 – learning and making connections (4,63). In Table 2 (ESDaS)⁶, the lowest assigned values are related to factor 3 – affective value (1.84) and the highest assigned values were factor 2 – cognitive value (4.57).

Table 1 - Distribution of subjects according to the answers assigned to the Experience Scale with the Debriefing. *Ribeirão Preto, SP, Brazil, 2016 (n=100)*

Scale	Minimum	Maximum	Mean	Standard Deviation
ESD *				
Factor 1 – Analyzing thoughts and feelings	3.0	5.0	4.5	0.450
Factor 2 – Learning and Making Connections	3.0	5.0	4.6	0.379
Factor 3 – Teacher's ability to conduct debriefing	3.4	5.0	4.5	0.428
Factor 4 – Appropriate Teacher Guidance	2.6	5.0	4.4	0.603
Total	3.1	5.0	4.5	0.360
ESD* – Self-evaluation				
Factor 1 – Analyzing thoughts and feelings	3.0	5.0	4.7	0.417
Factor 2 – Learning and Making Connections	3.2	5.0	4.7	0.387
Factor 3 – Teacher's ability to conduct debriefing	3.0	5.0	4.7	0.439
Factor 4 – Appropriate Teacher Guidance	3.0	5.0	4.7	0.421
Total	3.5	5.0	4.7	0.358

*The Experience Scale with Debriefing.

The correlation (*Pearson* correlation test)¹² between the instruments used ESD⁹ and ESDaS⁶ was (0.364) weak and positive.

Data analysis demonstrated normal sample distribution (Kolmogorov-Smirnov p value 0.133). Thus, to compare the

sample of students who performed the debriefing with the support of sound and image resources with the sample of students that did not use such resources was used the *t*. test. Table 3 shows the comparison between the two samples according to the two instruments applied.

Table 2 - Distribution of subjects according to the responses attributed to the Debriefing Evaluation Scale associated with the Simulation. *Ribeirão Preto, SP, Brazil, 2016 (n=100)*

Scale	Minimum	Maximum	Mean	Standard Deviation
ESDaS *				
Psychosocial value dimension	2.0	5.0	4.2	0.636
Cognitive value dimension	1.0	5.0	4.5	0.516
Affective value dimension	1.0	4.0	1.8	0.671
Total	1.5	4.2	3.4	0.359

* Evaluation Scale of Debriefing associated with Simulation.

Table 3 - Comparison between the values assigned to the debriefing obtained by the ESD and ESDaS scales. *Ribeirão Preto, SP, Brazil, 2016 (n=100)*

ESD*	Mean	Test t	Significance
Factor 1 – Analyzing the thoughts and feelings			
Intervention group	4.5	0.311	0.757
Control group	4.5		
Factor 2 – Learning and Making Connections			
Intervention group	4.6	-0.655	0.514
Control group	4.6		
Factor 3 – Teacher's ability to conduct debriefing			
Intervention group	4.5	-0.656	0.513
Control group	4.6		
Factor 4 – Appropriate Teacher Guidance			
Intervention group	4.4	0.104	0.917
Control group	4.4		
General			
Intervention group	4.5	-0.366	0.715
Control group	4.6		
ESDaS †	Mean	Test t	Significance
Psychosocial value dimension			
Intervention group	4.3	0.876	0.383
Control group	4.1		

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Table 3 - Comparison between the values assigned to the debriefing obtained by the ESD and ESDaS scales. *Ribeirão Preto, SP, Brazil, 2016 (n=100)*

ESDaS †	Mean	Test t	Significance
Cognitive value dimension			
Intervention group	4.5	0.288	0.774
Control group	4.5		
Affective value dimension			
Intervention group	1.8	0.547	0.586
Control group	1.8		
General			
Intervention group	3.5	1.066	0.289
Control group	3.4		

* The Experience Scale with Debriefing.

† Evaluation Scale of Debriefing associated with Simulation.

DISCUSSION

Clinical simulation has been used to improve skills, cognitive development, motivation, satisfaction, self-confidence, among other attributes that can strengthen the formation of the future professional or enable professionals already inserted in clinical practice. Among the students in this sample, although most of them were still attending the first years of the course, most of them had already experienced work practices and participated in simulated scenarios, and almost all of them attributed a high concept to the activity developed practice.

Among the various phases of the simulation method, debriefing has been characterized as a fundamental item in the teaching-learning process. No debriefing, through reflection on the action, develops the meaningful learning of the experiences of clinical situations.^{6,13,14}

When debriefing uses multimedia resources, incorporates tools that help the reflection of the students and the work of the facilitator. Video orientation allows participants to control the back and forth of the recorded scenes, which facilitates understanding of the activities performed. It also leads learners to self-assessment and enables them to identify the nESD to redo individual or group experiences that are not successful.¹⁵

During the debriefing, the mentioned critical points were presented to the participants, with the help of the facilitator, in order to highlight the interventions and the posture of the students.¹⁵

Properly used video resource involves identifying key points of the footage, using the facilitator's experience, which should provide fESDback and promote discussion of everyone focusing on problems during filming; have proficiency in the

proper functioning of the equipment to be able to pause the scenes during the comments.¹⁶

For the debriefing among the subjects in the sample, ESD⁹ and ESDaS.⁶ Both instruments showed reliability in the results found and showed high scores in the evaluation. However, the correlation between them obtained by the coefficient of Pearson showed a weak and positive correlation (ESD and ESDaS), which refers to the reflection that even among instruments that evaluate the same object, in the case the debriefing, results that do not converge can be found.

According to Tables 1 and 2, it is possible to identify that, although in general terms high values have been attributed to the instruments, in ESD⁹ factor 4 (appropriate teacher orientation) and ESDaS⁶ factor 3 (affective value) had the lowest scores checked.

During the debriefing, the facilitator should conduct the discussion to identify the attitudes developed in the scenario and the positive results and improve the practices carried out, connecting the students with theory and practice. It is extremely important that the environment is welcoming and that a confidentiality agreement is established. The more welcoming the debriefing relationship, the better the results obtained.¹⁷

Conducting a debriefing effective, is a complex task, since facilitators have their own styles and differentiated formations. In this context, *fESDback* of the video can support the educator's necessary changes.¹⁸

In this sample, when comparing the debriefing activities developed with the resources of sound and image with those of the group that did not use these resources, it was possible to identify that the results obtained in the comparison of the groups, both in the general scores of the instruments (ESD⁹ and ESDaS,⁶ as in the factors that compose them.

Generally, educational institutions are contained in performing simulated activities in structures that contain large amounts of sound and image resources, often of high cost and with restrictive specifications. However, in this sample, the results revealed that a debriefing valuable can be achieved even when video technology is not available. It should be noted that this study has limitations, such as being restricted to a single scenario - profession, with a reduced number of participants. In addition, most students had never participated in simulated clinical practices, which may have influenced their satisfaction. In this sense, studies have shown that student satisfaction with the use of active learning methods such as simulation in any degree of fidelity is evident. However, the results of this study focus on the development of debriefing and indicate that the use of technologies at this stage of the simulated practice nESDs to be better explored.

Further studies are necessary to corroborate the present findings. It is also important to emphasize that in evaluation processes, the sound and image resources are valuable,

they minimize discomforts or dubious information.¹⁹ Previous studies in medical education have accounted for more efficiency with feedback of videos when participants have repeated opportunities to review their performance.¹⁵ The sound and image feature may even be a method to be applied in post-debriefing, strengthening in the learner, individually, the reflection on the action.

CONCLUSION

This study emphasizes the importance of debriefing during clinical simulation. The results reported high values for the debriefing and stressed the importance of the role of the facilitator. However, no significant results were observed in the evaluation of debriefing when adding a video review to debriefing.

These results highlight the importance of reflection during education based on clinical simulation and suggest that effective teaching with simulation can be reached at debriefing even when video technology is not available.

Previous studies have emphasized the importance of using video as support for educational and evaluation practices, requiring additional quantitative and qualitative research on the subject to define its real impact.

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