

ORIGINAL RESEARCH

Structured debriefing in nursing simulation: students' perceptions

Verónica Rita Dias Coutinho ^{*1}, José Carlos Amado Martins¹, Fátima Pereira²

¹Nursing School of Coimbra, Coimbra, Portugal

²Faculty of Psychology and Educational Sciences, University of Porto, Porto, Portugal

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ABSTRACT

Background and objective: Debriefing is a strategy that allows participants to explore, analyze and synthesize their thinking processes, emotional status and other aspects in a simulated experience with a view to improving their performance in real-life situations. The aim of this study was to analyze the students' perceptions of structured debriefing.

Methods: A qualitative study was conducted with a sample of 22 final-year students of an undergraduate nursing degree. A voluntary, anonymous and confidential questionnaire was used. Content was analyzed based on Bardin's methodology.

Results: Five categories emerged from content analysis: concept, attributes, cognitive impact, psychosocial impact, and affective impact. These categories were grouped into two dimensions: 'Perceptions of Structured Debriefing' and 'Impact of Structured Debriefing on the Students'. Several suggestions emerged, such as the continuity of use and application to other contexts.

Conclusions: Students perceived structured debriefing as an interactive method which allows them to consolidate and systemize their knowledge, reflect individually and collectively on the activities, and structure their ideas. They also mentioned that it enabled them to be more comfortable to ask questions and establish a closer relationship with their colleagues, facilitating communication and improving their skills.

Key Words: Debriefing, Simulation, Students, Nursing

1. INTRODUCTION

Simulation is an important teaching and learning strategy used in nursing undergraduate and postgraduate programs, with gains for students.^[1-3] These gains are particularly important for developing clinical skills and knowledge, managing priorities, making decisions, improving performance, leaning to work in a team, and correcting mistakes without adverse effects on the patient.^[2,4]

Teaching and learning strategies have diversified and helped improve the pedagogical practices. The use of communication and information technologies has contributed to this

development. Simulation has been adopted as a pedagogical strategy for many years with an increase in development and use in recent years.^[5] Training specific skills is important but it is by solving complete and complex scenarios in a simulated environment that students/nurses strengthen their technical, relational and ethical skills.^[6]

The use of simulation has been positively assessed by the students. A systematic review^[7] on simulation outcomes from the students' perspective found increased satisfaction, knowledge, motivation, realism, self-confidence, technical skills, reflection-on-action, skills transfer, and cognitive and

*Correspondence: Verónica Rita Dias Coutinho; Email: vcoutinho@esenfc.pt; Address: Nursing School of Coimbra, Coimbra, Portugal.

psychomotor development.^[8] This also contributed to making students less afraid of performing the procedures directly on patients.

Debriefing is a part of the simulation experience within an active learning environment. It contributes to a more intense experience of clinical situations and improved use of cognitive, affective and psychomotor skills.^[9-11] Debriefing is a practice whereby students and teachers assess the clinical situation and stimulate the development of critical judgement through reflective learning. It is an opportunity for students to reflect on their performance during the simulation and determine how they might perform differently in future practices. It also offers students a reality check or a way to see themselves through the eyes of the teacher or their peers, something which participants (both learners and teachers) value and seek.^[12] It is, therefore, a moment of reflection that takes place after the simulation with the purpose of enhancing learning through an experimental exercise. It is conducted by a facilitator and focused on the simulation learning goals.^[13]

Debriefing should be divided into three phases: the initial reactions phase, the analysis phase, and the summary phase. It should also be based on honesty, positive reinforcement, and mutual help.^[14] In the debriefing environment, students should feel comfortable to express their feelings and needs and to reflect on possible errors.^[15] Although there is often no emphasis on post-experience teaching or debriefing, it is referred to in the literature as the key moment for learning, the heart and soul of simulation.^[16,17]

Debriefing is an integral part of simulation. In Portugal, and despite its importance for simulation, nursing studies on debriefing are scarce. As the use of simulation in nursing education is rapidly increasing, there is a need for a more in-depth knowledge of debriefing in order to develop culturally adapted theoretical frameworks to sustain and develop this practice. Nursing teachers also want to motivate their students to reflect on, rather than just memorize, and they struggle to confirm the effectiveness of teaching strategies with a positive impact on critical thinking and clinical reasoning.^[18]

One of the main premises underlying experiential learning through high-fidelity simulation is the philosophy of constructivism.^[19,20] According to this philosophy, students combine their previous knowledge with their current interactions to build, develop or rebuild their skills. Students can achieve these constructivist premises by sharing their perspectives with others.^[21] In this process, the teachers are responsible for establishing an active dialogue to facilitate knowledge development.^[22]

Debriefing is considered as the most important feature of simulation.^[23] It is based on the principles of adult learning, experiential learning^[24] and reflective practice.^[25] With regard to Kolb's model,^[24] different authors have emphasized that debriefing integrates the stages of the learning process, namely concrete experience, reflective observation, abstract conceptualization, and active experimentation.^[23,26,27]

Within this scope, the authors have proposed an easy-to-use Structured Debriefing (SD) for teachers, in a standard and consistent style, bringing about more benefits for nursing students and, consequently more health gains for patients. However, we are aware that it is not easy to design a SD to be equally applied by all the teachers involved. Thus, it is necessary to test, validate, train, and revalidate/reassess. The SD that we have developed focuses on Kolb's experiential learning theory^[24] and Shön's debriefing for meaningful learning.^[25]

Therefore, it is essential to identify the students' perceptions about SD, with the purpose of improving the whole process as it is through direct experience that students improve their knowledge.

2. METHOD

A qualitative, descriptive-exploratory study was conducted with content analysis performed using Bardin's methodology^[28] in an updated version.^[29]

The study was conducted at the Nursing School of Coimbra in April 2012 at the end of the classes of the curricular unit Emergency Nursing (final year of the undergraduate degree in Nursing). During the Emergency Nursing classes, students participated in different simulated clinical experiences. In the last nine hours of classes, a SD was held after each simulation by the same teacher in all each laboratorial practice groups, in order to avoid bias.

Data were collected through a questionnaire with nine open-ended questions focused on the students' perceptions about SD. The questions were analyzed for clarity and content validity through a pre-test with four students. Given the simplicity and clarity of the overall instrument, no changes were made.

After the last simulated clinical experiences, the questionnaires were sent by e-mail to 80 students. The students returned the completed questionnaires also by e-mail. Twenty-two students answered the questionnaire. The questionnaires were subsequently submitted in Portable Document Format for qualitative data analysis using Bardin's approach.^[28]

In the first stage, the authors conducted a fluctuating reading of the answers to identify the students' perceptions about SD.

For the encoding process, we selected the theme as record unit and introduced context units to understand its meaning. Subsequently, we developed the categories.

2.1 Participants

Twenty-two 4th-year students of the Undergraduate Nursing Degree of the Nursing School of Coimbra participated in this study. Students who met the following inclusion criteria were included in the study:

- (1) Attending the curricular unit of Emergency Nursing;
- (2) Agreeing to participate in the study;
- (3) Having attended the nine hours of classes of the curricular unit of Emergency Nursing, where scenarios and SDs were conducted.

The latter inclusion criterion is probably the reason for the low questionnaire response rate because, during this period, students are fully focused on the academic subjects.

2.2 Debriefing and simulated practices

We started by building a debriefing structure based on the following premises: debriefing is a method managed by the teacher in the simulated scenarios and consists of a self-reflection on the actions performed by the students. Several studies have shown that students become better prepared whenever debriefing is developed by a technologically advanced and prepared team.^[30] Some authors propose a three-stage^[14] or eight-stage^[31,32] debriefing. Inspired by these proposals, we developed a four-stage SD:

- (1) Meeting: Allowing students to describe what happened and express their feelings about what they felt during the simulated clinical experience;
- (2) Positive reinforcement: Allowing the observers to reflect on the positive aspects of the students' performance (without judging) and taking the opportunity to carry out a goal-oriented positive reinforcement;
- (3) Analysis: Facilitating the structured thinking of the students who participated in the simulated clinical experience, helping them to find less positive aspects through a critical analysis and identify strategies to correct them in the future (reflection-in-action and reflection-on-action);
- (4) Summary: Enhancing learning aspects, answering the group's questions, and presenting key points (action plan), theoretically justifying the action.

The implementation of these four stages of SD also involves setting a safe environment for debriefing based on confidentiality, trust, open communication, self-analysis, and reflection. In addition, the norms of the International Nursing Association for Clinical Simulation and Learning (INACSL)^[33] for best practices in simulation should be taken

into account, namely the five criteria for an effective debriefing: the facilitator's competency, the environment, the facilitator's responsibilities, a structured framework, objectives and outcomes.^[34]

Practical classes took place at the Simulation Centre, using the resolution of complete scenarios in realistic environments, with increasing difficulty, as a strategy. For the resolution of scenarios, students used realistic material and equipment. Medium-fidelity (Advanced Life Support Manikins Megacod® - adult, with VitalSim®, of Laerdal®) and high-fidelity manikins (iStan® - adult of Meti®) were used.

Subsequently, students were explained the purpose of this study and told that they would receive an open-ended questionnaire, which was voluntary and anonymous. After some doubts were clarified, students were invited to participate in the study.

2.3 The questionnaire

The questionnaire starts with a short presentation of its purpose, asking for accurate and honest answers. It is composed of two closed-ended questions on the participants' age and gender, and nine open-ended questions, as follows:

- What is your opinion about debriefing in general?
- What is your opinion about using the structured debriefing method?
- Was there any interaction between the teacher and the students during the debriefing? What is your opinion on that?
- During the discussion, the observers were invited to join in and talk about the positive and less positive aspects that needed to be improved. What is your opinion about this methodology? Please explain.
- What advantage(s) did structured debriefing bring to the learning process?
- When something is incorrectly done while performing a procedure, the teacher can point out the error or lead the student to discover the right way to proceed. Please briefly explain your opinion on that.
- Were there any other consequences from structured debriefing?
- What were the major challenges that you faced during debriefing?
- Please comment on/make relevant suggestions about debriefing.

2.4 Ethical considerations

The study is part of the research project 'Simulation in nursing education' registered in the Health Sciences Research Unit: Nursing and authorized by the President of the School

after a favorable opinion (P01-09/2010) of the Ethics Committee of the Research Unit.

During the whole process, the students' rights to privacy, anonymity, confidentiality and freedom were ensured. Students were told that there was no compensation for participating in the study and it was not associated with the evaluation process of the curricular unit. After receiving the completed questionnaire by e-mail, we copied the attached file without any identification.

3. RESULTS

We obtained a wealth of valuable information from the 22 female and male students, with a mean age of 22 years, who completed the questionnaire.

Five main categories resulted from data analysis: concept; attributes; cognitive impact; psychosocial impact; and affective impact, which included different subcategories. The categories were grouped into two dimensions: 'Perceptions of Structured Debriefing' and 'Impact of Structured Debriefing on then Students'. Some suggestions were also made regarding the application of the structured debriefing.

In the dimension 'Perceptions of Structured Debriefing', the 'concept' category resulted in one subcategory, whereas the 'attributes' category resulted in six subcategories. In the 'Impact of Structured Debriefing on the Students' dimension, the 'cognitive impact' category resulted in four subcategories, the 'psychosocial impact' category resulted in three categories, and the 'affective impact' category resulted in one subcategory.

Table 1. Perceptions of Structured Debriefing

Dimension	Category	Subcategories	Recording Units
Perceptions of Structured Debriefing	Concept	Method (n= 22)	'Different method, which makes it more interesting'
			'Method which allows acquiring more skills and gives immediate feedback on our performance'
	Attributes	Interactive (n=22)	'Dynamic, interactive and stimulating'
		Reflective (n=22)	'It allows students to reflect on their performance, allowing them to evolve'
		Identifying positive aspects and aspects to be improved (n=11)	'It allows assessing what went well and wrong during the performance'
		Consolidation of knowledge (n=10)	'Excellent means of identifying aspects to be maintained and improved'
	Stimulating (n=5)	'It allows the student to look at the practices as a consolidation of knowledge'	
	Structured thinking (n=5)	'... it encourages students to participate in simulations'	
			'Effective way of structuring thought'
			'It allows for a structured thinking'

As Table 1 shows, students (n = 22) considered structured debriefing to be an interactive and reflective method. As 'attributes', they mention that SD allows for interaction and reflection (n = 22), the possibility of identifying positive aspects and aspects that need to be improved (n = 11), the consolidation of knowledge (n = 10), and that it encourages and allows students (n = 5) to develop a structured thinking.

The 'Impact of Structured Debriefing on the Students' dimension is composed of three categories: 'cognitive impact', 'psychosocial impact', and 'affective impact'. All students mentioned that structured debriefing has a very positive impact on skills development. Furthermore, in the 'cognitive impact' category, all students (n = 22) mentioned that structured debriefing allows them to develop their reflection skills; most of them (n = 17) mentioned that it allows for knowledge improvement, with the student playing an active role; and some mentioned that it leads them to change their behaviors (n = 8) and creates a relaxed atmosphere that encourages these previous aspects (n = 5).

With regard to the 'Psychosocial impact' category, students believe that structured debriefing minimizes their distress and insecurity, provides positive reinforcement, enables an interactive practice, and encourages students to repeat and to take part in the action (n = 11). Additionally, students believe that this type of debriefing strengthens the relationships between students and teachers/facilitators (n = 9), improves their performance and enables the development of teamwork skills (n = 3).

Finally, in the 'affective impact' category (n = 11), students report that structured debriefing provides them more motivation, interest and initiative, mitigates their fear and makes them more involved since it leads to a very positive reinforcement. The observers mention positive aspects and the participants identify the aspects to be improved through self-criticism and self-reflection after structuring their thoughts with the help of the teacher/facilitator. Students mention that mistakes are not 'pointed out'; instead, they feel comfortable to ask questions and assimilate criticism as something constructive, without fear for negative attitudes.

Table 2. Impact of Structured Debriefing on the Students

Dimension	Category	Subcategories	Recording Units
Impact of Structured Debriefing on the Students	Cognitive	Learning (n=17)	'It helps students become more interactive and active in their knowledge/learning processes' 'It leads students to a self-criticism in order to identify gaps and combine theoretical contents' 'It helped significantly in the learning process ...'
		Ability to reflect (n=22)	'Development of the critical-reflective ability/self-reflection' 'Learning through observation, reflection and participation in the discussion after practice'
		Behavior (n=8)	'...it encourages students' to learn more and change their behavior ...'
		Environment (n=5)	'...it provides more sharing and learning opportunities...The teachers have created a learning and rewarding environment' '... it provides a more relaxed atmosphere'
	Psychosocial	Self-confidence (n=11)	'... minimizes the students' distress, fear and insecurity, and improves their self-esteem and confidence' 'In general, you start by reflecting on the good aspects. This approach helps students to take more initiative and be more interested in repeating the procedures.'
		Student/teacher relationship (n=9)	'We learn to observe, establish priorities, make decisions...more self-confidence'
		Teamwork (n=3)	'The teacher's presence is essential for self-reflection' 'It allows for closer and empathic relationships...'
	Affective	Protection against negative attitudes (n=11)	'...it allows us to know if we work well in a team/develop teamwork'
			'The teacher guides the discussion, rather than pointing out the error...to motivate us' 'It increases receptivity to criticism, looking at it as something constructive' '...self-criticism is psychologically less aggressive than being criticized by another person' 'It makes students feel valued, rather than ashamed and useless in the presence of the their colleagues'

Students made several suggestions in the open-ended question 'Please comment on/make relevant suggestions about debriefing, namely:

- This method should continue to be applied in the future;
- SD should be implemented not only in the curricular unit of Emergency Nursing, but also in other curricular units with laboratory classes throughout the degree;
- SD should be implemented in all clinical internships so that students can change their behaviors, and think in a more structured and reasoned way in every intervention.

4. DISCUSSION

Sustained partnership is essential to training, where activities should be planned by all parties involved, both individually and as a group.^[35]

Over the past ten years, simulation and debriefing have been gaining ground as active teaching/learning strategies with a

successful impact on students' thinking and lifelong learning.^[36] This study has confirmed that students believe that SD has a positive impact and significant cognitive, psychosocial and affective benefits. After analyzing the students' perceptions, four categories with their corresponding subcategories emerged, which is consistent with other studies on debriefing.

Debriefing is an important methodology for the development of simulation, the promotion of students' self-evaluation, learning and re-learning processes, and the constructive discussion and analysis of the situation. In this study, students identified debriefing as a clear and different concept that enabled them to acquire more skills. They have also mentioned that SD has specific attributes and that it is a method of knowledge consolidation that develops structured thinking.

In a focus group study^[37] with nursing bachelor's degree students, the authors found that the students perceived debriefing as contributing to their learning ability. Five main themes emerged: safe environment; debriefing to explore thoughts; feedback from multiple perspectives; all in this

together; and group facilitation. The analysis of these topics allowed the authors to integrate them into the subcategories on the impact of structured debriefing.

The students in our study mention that structured debriefing allows for a closer empathic relationship between the teacher and the student, where they see the teacher as a key member of the team who facilitates and guides reflection in order to identify the less positive aspects. This perception is identical to the results found by Cantrell^[38] and Rudolph *et al.*^[39] These authors consider debriefing as a formative assessment involving interaction and discussion between the students and the facilitator in order to improve performance. In Schön's work,^[25] debriefing through meaningful learning uses a consistent process to guide reflection and dialogue throughout the learning experience. The student is guided through a reflective conversation in order to detect what is relevant and meaningful. Several authors mention that debriefing offers an opportunity to reformulate the use of reflection and dialogue and helps the student to establish a connection between thinking and performing.^[19,33,36,40] It becomes a catalyst to assist nursing teachers in teaching clinical reasoning skills.

Debriefing is as an essential component of simulation.^[11] Debriefing has been identified as an intentional and important phase for the consolidation and transfer of learning.^[39,41] It has also been described as the cornerstone of experiential learning in high-fidelity simulation.^[26,38,42,43] Students have the opportunity to close the learning cycle between action and reflection, *i.e.* the stages of experiential learning.^[44] Debriefing is a teaching and learning strategy^[38] that facilitates the students' reflection, obtaining consensus on the clinical issues emerging during the simulation.^[26,43] In this study, the students have the same perception of cognitive impact. They emphasize the interactivity and pro-activity of the learning process that is improved through structured debriefing, as it increases the sharing of knowledge between students, as well as the development of critical-reflective and self-reflection skills in a relaxed atmosphere.^[25,45] Furthermore, Kolb^[24] argues that, through this active learning process, students reflect on the situation based on their current knowledge, and on a new or recalled knowledge based on experiential learning. Martins^[6] argues that students enhance their knowledge and develop a set of technical, relational and ethical skills through simulation and related debriefing.

The purpose of debriefing is to recreate representations of the students' interactions and build on the existing knowledge in order to create mental representations of clinical problems through the recognition of standards and cognitive inference.^[46] Debriefing helps students to discuss their

actions^[47] and correcting mistakes.^[47,48] Many authors suggest that debriefing must be performed in a judgement-free and nonthreatening way and that it must not be limited to a mere inquiry.^[19] As referred to in the 'psychosocial impact' category, the students in our study have the same opinion, as they believe that SD is a method that minimizes fear and distress and increases their confidence. They are comfortable enough to ask questions and be self-reflective, identifying their own mistakes while connecting practice to theory and developing teamwork skills. Students' perceptions of SD also focus on its impact on themselves as individuals, namely the cognitive impact. They emphasize the ability to develop knowledge, increase learning and reflect on their actions using structured thinking, developing a more sustained clinical reasoning and decision-making. It also allows for a closer relationship between colleagues, with a critical-reflective spirit and teacher-student interaction in a safe and relaxed environment, providing more self-confidence.

These perceptions can be consistent with the ideas put forward by some authors,^[7,10,18] since nursing teachers struggle to prove the effectiveness of education strategies with a positive impact on critical thinking and clinical reasoning. Simulation is also a good method for students to develop their ethical skills.^[6,49]

It is important to have the necessary skills and body of knowledge to conduct an effective debriefing, as well as the development of high-fidelity simulation scenarios in nursing.^[10] Therefore, nursing teachers need to be familiar with and develop best practice frameworks for debriefing in simulation.^[19] Limoges^[50] emphasizes debriefing as an opportunity to summarize cognitive and behavioral learning, but also to analyze the moral and psychological aspects of the students' responsibilities for becoming professionals. Debriefing is also an important tool to help students improve the affective domain of learning.^[48] This idea is also perceived by the students in our study when mentioning the protection against negative attitudes through SD. Students feel more motivated by the way the teacher guides SD, as they assimilate criticism as constructive and consider self-criticism to be a positive aspect. They also refer that they feel more motivated to embrace new learning processes and new situations with SD, and that their self-confidence increases since they identify their own mistakes (even if they are recognized only when the teacher guides the discussion). Another positive aspect is the fact that the mistakes are tackled after reflection and identification of positive aspects, making the entire process less distressing or not distressing at all.

This whole process is relevant and important for teachers and students. It is not enough to have both the material and the

equipment. If the scenario is not well set up, with specific pedagogical goals and a motivated and prepared team, with the simulation being followed by a debriefing, there will be no clear gains for learning and health. Since this process is complex and demanding, 'we are not looking for professionals who are able to do things, but professionals who know how to do things, when to do them and why, and who are able to do things differently whenever necessary'.^[51]

Limitations

Our study had specific limitations as a result from being a qualitative study, such as the small sample size and the fact that it was composed of students from a area and specific curricular unit. For this reason, the sample is not necessarily representative of all nursing students. Nonetheless, given the lack of literature on SD in Portugal, this study was important to consolidate information in this area, which can be extended to other similar academic cultures.

5. CONCLUSION

Simulation has become an important part of nursing education, and research on this subject has increased. However, these studies are still scarce in Portugal. The results of this study confirm that this method is considered to be inter-

active, stimulating, and reflective, allowing for knowledge consolidation and systematization, as well as individual and collective reflection with a structured thinking. In a safe environment, this method encourages students not to be afraid of giving their opinion, reflect on their interventions, and change their behaviors. It facilitates communication among participants and the transition from theory to practice and from practice to theory. In addition, SD promotes constructive criticism based on reflection-in-action and reflection-on-action.

The authors acknowledge the limitations of this study. Nevertheless, we believe that it was important for consolidating more information in this field, allowing us to identify the students' perceptions of SD. Further studies should be conducted with more representative samples and other methodologies and their results should be disclosed to health professionals.

This study showed that SD has a positive impact on the students. The authors believe that the use of this method will contribute for an improvement in nursing education and nursing care and, consequently, increased health gains.

CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there is no conflict of interest.

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