ORIGINAL RESEARCH

Perception of nursing students on high-fidelity practices: a phenomenological study

Rui Baptista *[1,2], Fátima Pereira[3], José Martins[2]

[1] Institute of Biomedical Sciences Abel Salazar, University of Porto, Porto, Portugal
[2] Nursing School of Coimbra, Coimbra, Portugal
[3] Faculty of Psychology and Educational Sciences, University of Porto, Porto, Portugal

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ABSTRACT

Objective: High-fidelity simulation is a teaching/learning strategy increasingly used by nursing schools. Students undergo simulated clinical experiences very similar to the real context, developing technical and non-technical skills. The objective of this study is to identify the perceptions of students of the Bachelor's Degree in Nursing regarding their participation in simulated clinical experiences with high-fidelity simulation.
Methods: Qualitative study of phenomenological approach according to the seven procedural steps of methodological interpretation presented by Amadeo Giorgi.
Results: From the analysis of interviews with 13 students participating in the study, an essential structure of the phenomenon emerged which reflects these students' perception of simulated clinical experiences on high-fidelity simulation, consisting of four components: "Being a student with high-fidelity simulation", "Relationship with peers in the simulation", "High-fidelity simulated practice", and "Future expectations after high-fidelity simulation".
Conclusions: The students are satisfied with their experience of high-fidelity simulation. Despite moments of great stress and anxiety, it helps broaden their knowledge and prepares them for the real context.

Key Words: High-fidelity simulation, Nursing students, Perception

1. INTRODUCTION

The use of simulation has always been part of teaching in nursing. In the past, the available resources did not allow for simulated interactive and realistic practice. Today, with a new paradigm in nursing education and technological development, new simulation concepts have emerged.

Simulation is an attempt to imitate a given clinical situation so that at a later moment in a real context there is a better understanding and management of the situation. It is a technique that uses an artificial environment, trying to recreate a real situation in order to allow the student to practice, learn, evaluate, test, or develop an understanding of different human actions.[1] It is a teaching and learning strategy which consists of a set of activities that seek to replicate real contexts,[2] it is effective in acquiring knowledge and skills through experience and drawing on practical problem solving and development of technical skills in a safe and controlled environment.[3]

High-fidelity simulation (HFS) is increasingly popular in nursing education.[4–6] An important element in HFS is the simulator which, when computer-controlled, recreates a person, interacting verbally and physiologically with interven-

*Correspondence: Rui Baptista; Email: ruib@esenfc.pt; Address: Nursing School of Coimbra, Coimbra, Portugal.

tions made. However, in order for it to be high-fidelity, the entire environment is required to be prepared to recreate a real clinical situation.[7,8]

This new strategy develops psychomotor skills, but mostly critical thinking, reflection on practices,[6,8] teamwork, understanding of disease complex processes, and the ability to make clinical decisions.[9]

Scientific evidence has shown that HFS is important in nursing education. Students have a more active role in the learning process and are more motivated to learn.[7] They report that this experience enables them to acquire knowledge necessary for the provision of effective care to the patient.[10]

HFS is recent in Portugal and in need of much research because of the cultural and professional specificities. Thus arises the starting point of this study: What are the perceptions of students of the Bachelor's Degree in Nursing on their experiences with high-fidelity simulated practice?

The main objective was to understand and analyze the perceptions of students of the Bachelor's Degree in Nursing on their experiences when participating in simulated high-fidelity clinical experiences.

Simulation has a maximum benefit if participants see it as legitimate, authentic and realistic. For students, the simulation is important for teamwork, realism, and active learning.[7]

In order to guide the study, the following specific objectives were defined:

- To identify feelings experienced by students when doing HFS;
- To understand students' experiences with HFS from their perspectives;
- To identify meanings attributed by students to their experiences with HFS during their Degree in Nursing;
- To identify problems experienced by students with HFS;
- To identify factors which students experienced as learning facilitators in HFS.

2. METHODS

We opted for a phenomenological approach, since its purpose is to describe a particular phenomenon or appearance of things as an experience and its significance in the view of those who experienced it.[11,12] The seven procedural steps of methodological interpretation presented by Amadeo Giorgi was used.[11]

So as not to influence the study with the researcher's beliefs and preconceptions about what he knows, has read, or has experienced on the subject, a checklist of his beliefs and prejudices on the phenomenon was drawn up, which also contributed to the design of the instrument for data collection, to conduct the interview and for the interpretation of data.[13] This checklist helps the researcher to make changes in the interview script validation process and it is important to not induce responses or confirmations of their beliefs in the interview and thoughout the study.[12]

The researcher posed the following question: What do I know about high-fidelity simulation and the students who use it as a teaching and learning strategy?

- HFS requires a space with realistic materials and equipment that represent the real context almost perfectly;
- Human patients simulators "react" like a real patient to the interventions performed by students;
- For a high-fidelity scenario, it is necessary to prepare thoroughly and in advance all the surroundings, the objectives to be achieved, the sequence of events, and issues to reflect on at the end of the scenario;
- Teachers have to master the technology, to be imbued with the spirit of the situation which is set up and they have to prepare in advance for the scenario that they will lead;
- Students seem to get very enthused with simulated clinical situations because the simulator answers their questions and has reactions/movements like a real patient;
- Some students seem to have some reluctance to volunteer for the scenarios. Probably the realism of the situation reminds them of clinical teaching;
- Feelings of joy and even some emotional liability are frequent at the end of the scenarios;
- The most difficult moments in these simulated experiences must be: a feeling of not being able to resolve the scenario, the patient's (simulator) situation is aggravated and/or dies, and showing colleagues who observe them the difficulties in solving scenarios.

2.1 Participants

After 18 hours of high-fidelity simulated clinical experience of emergency unit classes, in a simulation center environment, 13 students of the 4th year of the Bachelor's Degree in Nursing were invited to participate (intentional sample) in the study. Students who had not had practice with high-fidelity simulators were excluded.

2.2 Instrument and data collection

Data collection was conducted in April and May 2013, through a semi-structured interview conducted in a private setting of the simulation center. The script of the interview

consists of two parts and was validated by a panel of four experts in education[2] and nursing[2] research, and an interview served as a pretest was conducted. The first part of the interview consisted of socio-demographic questions (age, gender and how many simulated clinical experiences did the student participated). In the second part, the participant was asked to talk about his/her experiences when he/she participated in the HFS scenarios ("I invite you to talk about the experience that you participated in HFS scenarios"). For guiding the interview we had also some questions/issues:

- Tell me about the feelings you experienced when you were developing the scenario.
- Tell me about the difficulties you experiences during simulated practice.
- What influence did this practice have on your academic development?
- What impact will this practice have on your professional life?

2.3 Data analysis

Interviews were transcribed and analyzed using QSR NVivo 8 program, according to the procedural steps of methodological interpretation presented by Amadeo Giorgi.[11] An initial reading of the interviews was done to grasp the general meaning of the speech. After obtaining the sense of the whole, we did a new reading of the interviews, identified the units of meaning and selected the most significant for the understanding of the phenomenon experienced. The meaning units were transformed into stricter scientific language, in order to clarify the meaning of the descriptions given by the participants. Finally, the key constituents of meanings and their relations were identified.

2.4 Ethical considerations

The study received approval from the Board of the School (194/Press) and the Ethics Committee of the Research Unit in Health Sciences – Nursing (P37-5/2011). Students' participation was voluntary. The participants signed an informed consent form. The recordings resulting from the interviews were deleted after being analyzed.

To ensure confidentiality, participants were not identified throughout the study and the designation of E1; E2;...E13 was used.

3. Research findings

The thirteen students who participated in the study were aged between 21 and 26. Most are male gender.[8] All respondents participated in more than ten simulated clinical experiences. The total interview time was six hours and six minutes, the shortest interview lasted 15 minutes and the longest 40 minutes, with an average of 28.15 minutes.

An essential structure of the phenomenon which reflects the perception of students on high-fidelity simulated clinical experiences came to light after analyzing the data. It consists of four components: "Being a student with high-fidelity simulation", "Relationship with peers in simulation", "High-fidelity simulated practice" and "Future expectations after high-fidelity simulation" (see Figure 1).

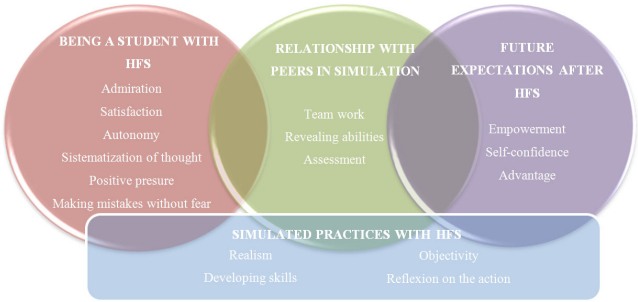

Figure 1. Essential structure of the phenomenon experienced by the student with HFS

The four components are interconnected and represent the experience of high fidelity simulation which is reflected on a personal level as a nursing student, at a relational level with their peers and teachers, and at a future level as a nurse in patient care.

3.1 Being a student with high-fidelity simulation

Six key components were outlined: Admiration, Satisfaction, Autonomy, Systematization of thought, Positive pressure and Making mistakes without fear.

3.1.1 *Admiration*

Contact with high-fidelity simulators in a realistic environment occurred in the final year and their involvement with all these experiences amazed the students.

The possibility of joining technology and teaching and testing some of the capabilities of the simulators were a cause for amazement.

> "I felt surprised because I had never been in contact with that kind of manikins." (E9)
>
> "It really is an intelligent machine, I was fascinated." (E7)

3.1.2 *Satisfaction*

The ability to practice nursing care in a realistic environment and to understand that the acquired skills have applicability in a real context are factors which pleased participants in this study.

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> "The fact that we experience this during the simulation and we think that we can do the same in reality is rewarding." (E3)

For students all the dynamics of simulated clinical experiences and the ability to solve the scenarios presented was cause for satisfaction.

> "(...) When we guide our performance properly and despite being a little nervous at first (not knowing what the situation was), we can reverse the situation without consequences for the patient, this leads us to have feelings of satisfaction, accomplishment and greatly contributes to personal fulfillment." (E3)

3.1.3 *Autonomy*

In the high-fidelity simulation the teacher need not be physically present in the room where the scene takes place. However, he/she is in an adjoining room to control the simulator and observe what is being developed by students through one-way glass.

Participants expressed feeling a greater responsibility during the scenarios compared to the actual context where the teacher does not need to be present to guide them.

> "You feel more responsibility, we have to be more focused. There is a manikin but it is interacting with us, whether we know it is someone behind the glass or not." (E11)
>
> "(...) In the real context, the teachers are not there to give us clues about what we should and should not do." (E1)

The absence of the teacher in the same space encourages students to develop assessment skills, clinical decision-making and teamwork.

> "The fact that we do not have the teacher's physical presence in the room means we manage to get a greater sense of individual and team work and it works much better." (E5)

3.1.4 *Systematization of thought*

The resolution of complete scenarios and compliance with performance algorithms in a controlled environment contributed to participants structuring their thought in a calmer and more progressive manner.

> "(...) Having contact with something so real, I began to realize that is worth doing things calmly and doing them well, we begin to get a sense of priorities." (E12)

The student is aware of the importance of structured thinking for clinical practice and that it makes a difference in the outcome.

> "The simulation influenced my way of thinking, to systematize the ABC. I think the guidance given in class helped us to systematize information and to know how to act." (E8)

3.1.5 *Positive pressure*

In a high-fidelity simulated practice scenario the "patient's" instability can appear at any time and in most cases there is an imminent life threat.

The pressure is comparable to the real context due to the realism in the scenarios provided.

> "There's always more pressure when we work with high-fidelity simulators, (...) the greater the technology used, the more pressure will be felt as the situations get worse." (E3)

The participants consider that the pressure is positive because it helps address the different scenarios in a fast, correct and timely manner.

> "It creates pressure, but that is good. That is one of the goals of a simulation – to create pressure (...) it must be like that. If we had no pressure we would never do it and we'd get frustrated when we couldn't give a clear answer." (E3)

In simulated practice there should be pressure to stimulate the student to live with it and develop strategies to overcome it in the real context.

> "(...) The pressure that exists in the simulation can also be seen in the real context. What is needed is (...) to care for and, in that particular case, to maintain or restore that person's living and health condition." (E5)
>
> "In the case of simulation, it is good because it helps us to control the stress of a real situation and to be able to intervene." (E3)
>
> "(...) It is a positive aspect, because in practical terms this is what will happen so we'll have to think fast, act fast and well." (E6)

3.1.6 *Making mistakes without fear*

Caring for a patient is one of the most stressful moments for a nursing student, because they know since they are learning the risk of error is large and the consequences of these mistakes can be severe for the patient and traumatic for the student. Training with high-fidelity simulation allows them to act without fear and without endangering the patient's life.

> "(...) If we go wrong here it has no major repercussions, whereas if it is in reality, then it does." (E1) "We know it's a machine, a robot, that is not a human life which makes me more at ease, there isn't that nervousness." (E2)

For participants, the possibility of making mistakes should occur in a controlled setting such as a simulation center, where there are no repercussions for the patient and where the student learns to avoid them and fix them.

> "It's better to make mistakes on the manikin there than on a person. If we don't make mistakes, because we always have someone to warn us, it seems that we never go wrong." (E13)

3.2 Relationship with simulation peers

Three key constituents were outlined: Working as a team, Revealing abilities and Assessment.

3.2.1 *Team work*

In simulated clinical trials students perform scenes as part of a team where everyone develops the assigned or previously selected functions without losing connection with the group. The training of the different functions within the work team and knowing when and how to take on this task, although covered in the classroom, is only internalized with simulated practice.

> "(...) As for the question of the elements that make up a team, I know what each of the elements does, but to truly take the role, we must have practice, we can't do it only with theory." (E9)

For participants, to be part of a working team carrying out their tasks and contributing to a positive end result, made them see past the surroundings, and made them focus on the practice.

> "(...) When I was performing the scenario I blocked out the rest without thinking about other things when I was working as a team and it did not make any difference to me." (E10)

Students consider the experience of working as a team in simulation important, for the strengthening of ties between the group, the similarity with reality and for the mutual assistance in care.

> "It is a more gradual, more continuous process, with more help, an establishment of relations in care and between the team, which we can see in the simulation center." (E5)

3.2.2 *Revealing abilities*

Colleagues attending the scenario carried out by four or five students witness the simulated clinical experiences and although they do not participate directly in the scenarios, they observe and provide input at the end for better performance.

When they were performing the simulated practice students could feel observed by their peers, exposing their capabilities or limitations in solving scenarios to everyone.

> "It was often because our colleagues where there and we were showing them whether we could do it or not." (E2)
>
> "I felt some nervousness and some anxiety about being observed and about my colleagues watching and about being criticized." (E6)

Revealing their abilities triggers feelings of fear, anxiety and nervousness in students caused by the inability to solve scenarios and to show colleagues and teachers they cannot do it and, therefore not be valued by them.

> "In that moment, (...) always being subject to the gaze of teachers, there is a moment of nervousness, anxiety about being able to respond or not." (E6)
>
> "We always try to do better so that others might say: Hey! They're doing it really well, they know what they're doing (...), and that's good." (E12)

Comments that colleagues made on the limitations in solving scenarios exposed to everyone the inability they still had in taking care of a real patient. These comments were felt more intensely because, although they were observers, they were also commenting on their colleagues, thus mirroring their own limitations.

> "(...) When I was on this side I did the same, I would comment that they should have done that. Of course it is much calmer, we're more relaxed, we think better." (E11)
>
> "Observing colleagues doing it, we get a sense of how we are doing, whether we are doing well or badly, whether we are better or worse." (E12)

However, the comments made by colleagues were also considered beneficial, because they prepared students for real life, where the patient and everyone around them will comment on and may even criticize the nurses' performance.

> "In that moment it wasn't good for us, even because our colleagues were watching, but let's face it, in real life it will be much worse." (E2)
>
> "(...) The presence of colleagues disturbs us a little, but that's also our experience in emergency care, in which we are taking action and everybody is watching us." (E8)

3.2.3 *Assessment*

For the participants in the study the assessment of their own performance during the scenarios is inevitable, even if it is not a formal evaluation and where colleagues exert great pressure.

> "(...) Whether we like it or not, we are always being assessed even if only by our colleagues." (E12)

They consider that peer assessment is more important than the suggestions or comments made by teachers.

> "If we were alone, the teacher could even give us some feedback, but it is not the same as observing what colleagues are doing and I can see if they are better or not, than I am". (E12)

3.3 High-fidelity simulated practice

Four key components were outlined: Realism, Developing skills, Objectivity and Reflection on the action.

3.3.1 *Realism*

The use of materials and equipment that reflect the environment of a care unit provides students with the possibility of coming into contact with experiences that mimic the real contexts and provide them with greater competence.

> "I found this difficult in the early stages, because the simulated practice we had... was very: imagine this ... and it was a bit tricky to imagine what it is in reality and this adaptation is difficult." (E1)

Students regard the simulator as the most important and essential element of simulated clinical experience, due to its ability to interact and respond physiologically to interventions.

> "I felt almost like I was in a real context, because we had to see vital signs and everything we did influenced it" (E2)

Participants experienced this proximity of the simulator to reality as a patient in need of care, increasing their sense of responsibility.

> "The manikin reminds you of a person. It gives you a totally different responsibility, drive and concentration" (E11)
>
> "We thought it was a real situation and we had to act. We didn't see it as a manikin, we already saw it as a person" (E13)

The realism of the simulated clinical experiences was extended to all the surroundings of the scene, providing another type of experience and skills.

> "They were able to recreate situations that happen in everyday life, even the fact that we called the doctor, clung to the phone and we talked and were given instructions." (E2)

Despite the simulator being so close to real it is still a manikin and simulated clinical experiences are nonetheless also conducted in a laboratory setting without the presence of a patient.

> "Although it's much more real, the communication level with the manikin is a little ... (laugh), it's lying there, not moving, it doesn't react in a coordinated manner, it reacts by signs." (E1)
>
> "Despite giving more responsibility and requiring more of us it's still a manikin." (E11)

3.3.2 *Developing skills*

The diversity and the realism of the scenarios and the difficulties experienced in the practices encouraged students to build their knowledge with research they needed to make without prior indication from the teacher.

> "I participated in a situation where the simulator had an acute pulmonary edema and I thought: this is fantastic, lots of things happen and I went home to do some research on the subject." (E10)
>
> "(...) I had to go read the guidelines to understand. I had to read to bridge the gaps. Doubts emerged faster than in theory." (E12)

The fact that simulated practices are so similar to the real ones and the need to make their abilities visible to their colleagues encouraged students to research the topics, which cannot be compared with theoretical contents.

> "(...) We are more motivated for that situation. We think about what we could do and it encourages us to do research in order to do it right, whether in class or in the future." (E10)

> "(...) Knowing that during that week we have certain practices encourages us to study. I want to know how to do it." (E4)

With high-fidelity simulation the student develops quick thinking.

> "(...) I think it streamlined our thought, we had to think faster to make things right." (E10)
>
> "(...) It develops quicker thinking and without these simulators, theory would not give us this resourcefulness." (E4)

Students reported that high-fidelity simulation increased their sense of responsibility and encouraged them to have a more critical attitude towards the practices they performed.

> "(...) Imagining that one day, in practice, this situation could occur and having that fear of whether I'm doing the right thing. Maybe I'm not?" (E10)
>
> "(...) It further stimulates critical thinking, in the sense that we don't do things mechanically, copying. But thinking about what we are doing and what we should do and then make an assessment to find out what went wrong and how we can improve." (E6)

3.3.3 *Objectivity*

As a patient, it reacts to the interventions performed by nurses so HFS is also objective and the simulator has an immediate response and all of the students' actions cause a reaction.

> "We realize in real-time what is happening and that what we are doing is having that effect, that impact." (E13)
>
> "(...) All that we did had a reaction, a consequence and we could see it, which makes it much more real." (E2)

This objectivity and the possibility of an immediate reaction allow students to identify their mistakes and whether what they are doing is correct or not.

> "(...) It is by the signs that the manikin gives us that we must identify what we are not doing so well." (E13)
>
> "We get the perception of sensitivity, from the way we do the practice we know if it was in fact well done and because it has an immediate consequence, it makes us readjust and think about our actions." (E5)

3.3.4 *Reflection on the action*

Being able to reflect on the simulated practice during the debriefing helped the students have a better perception of their performance and proved to be as important as the practice itself.

> "(...) This reflection allowed us to see what had really happened, good or bad, what we could change and what we should keep." (E10)
>
> "Without reflection it is a bit empty. We could still do it but we would wonder if it what was all right or all wrong? What can we improve?" (E9)

Reflection on the action contributed to the need students felt to invest more in their learning.

> "(...) It was important in that we know what our strengths and what our weaknesses are so that we can make an effort." (E8)

3.4 Future expectations after high-fidelity simulation

Regarding the component – Future Expectations, three key components were set out: Empowerment, Self-confidence and Advantage.

3.4.1 *Empowerment*

Participants feel that the diversity of scenarios influences the way they perform in real life and that it prepares them better to cope with most situations, taking on a more proactive role.

> "(...) In the future when I see myself in this situation, I will think about what we saw in the practices (...) I think all this will have more of an effect on my role as nurse." (E10)
>
> "The fact that we practiced with these simulators has been an asset to professional enrichment, since the situations were 80% to 90% real. This helps us have a different, more objective and clearer perspective than we would have if we had not done the simulations." (E3)

For participants, the high-fidelity simulated practice helped them to get a sense of how the real context might be and thus feel better prepared to act, to think in a systematic way and to think more about the situations.

> "(...) It helped me have a better perception of what the real thing may be, both in terms of managing feelings and in terms of the possible reactions of the patient and thus have a faster intervention." (E3)

> "(...) I feel I am more prepared to think in an emergency situation. Of course it's always a stressful situation, but I'm calmer and able to reflect and think about what I'm doing." (E12)

They admit to having limitations in simulated clinical experience, and although it provides them with greater autonomy in the practice of care, the experience contributes to a more realistic awareness of their capabilities.

> "I know I am still very inexperienced, but I'm able to and can do something for that person." (E8)
>
> "I am aware that, despite having trained here, I am not able to respond to all situations, (...)" (E9)

3.4.2 *Self-confidence*

Participants feel more confident for clinical practice because in the simulated context they developed techniques and clinical decision-making skills.

> "(...) Having to act quickly while our technique and knowledge are present and thinking all the time, gave me more confidence." (E11)

For them, what they practiced in the simulation center has applicability in the reality of contexts.

> "After practice I feel much more confident, because we see it applied in reality." (E13)

The realism of the simulated clinical experiences served as previous experience, avoiding the discomfort of the unknown.

> "(...) The fact that it's so close to reality contributes greatly to improving the practical aspect and to feeling more confident because we had a previous experience that enabled us to act." (E3)
>
> "I feel that if I am in a very similar situation to the one I experienced, I can give a very different response from the one I would give if I hadn't had the interaction with the manikins and devices that I had in that particular situation." (E5)

Participants have more confidence in the safety of their care giving, which contributes to a more proactive and less passive student.

> "After practice I feel much more confident, much more assured, much more predisposed to ... a lot more action, not so much inertia, not so much ignorance." (E5)

They feel more insight into different situations, able to carry out an assessment of the patient and even to act with or without help, if needed.

> "I felt much more prepared, with much more insight into the situation." (E6)
>
> "After the practice, and when I see a person in distress, whatever it may be, I can act immediately and help that person, either with other professional colleagues or even alone." (E8)

3.4.3 *Advantage*

The fact that some nursing schools invest in this teaching and learning strategy, contributes to participants considering themselves better prepared for and more confident in the nursing profession than other students from other nursing schools. They feel that by having this experience, they have an advantage in the labor market.

> "(...) When we are working, because of the simulated practice we had, we are better prepared than other colleagues." (E1)
>
> "I had a colleague who hadn't had high-fidelity practice (...) and he told me he was not prepared. I told him I had already practiced these situations in class and I was ready and he was like Bah!" (E9)
>
> "Since I know other schools, I know that many of them don't have half of what we have and this is much more advantageous in terms of the labor market." (E1)

4. DISCUSSION

After the presentation of the results obtained from the analysis of the interviews and the meanings attributed to the experience with HFS by the students, it is important to conduct the discussion based on the essential structure of the phenomenon that has emerged, according to the four components that constitute it.

4.1 Being a student with high-fidelity simulation

High-fidelity simulation is a technique not a technology, as Gaba stated,[14] but the possibility of being able to associate them appeals greatly to the students. The possibility of learning following the ever-increasing advances in technology and the fact that it contributes to their development as future nurses makes them very happy.

Technological advances in health are increasingly evident. In nursing, HFS as a teaching and learning strategy enables students to acquire professional skills faster and perform better when compared with traditional teaching methods.[15]

The inclusion of HFS in nursing education provides high levels of satisfaction for students with possible benefits in improving clinical skills to use in the hospital setting.[16]

Students consider simulation a positive experience[17] due to its realism, the depth of experiences and the possibility of coming into contact with situations which are uncommon in the real context.[4]

Some studies report that HFS seems to create more enthusiasm than low-fidelity simulation,[18–20] with benefits for students' learning.[21,22]

Students who are more enthusiastic, interested and engaged in their learning are more motivated students.[23] Several studies indicate that involvement in learning depends not only on the cognitive abilities of students, but is also influenced by motivational and affective factors.[24]

The fact that students are satisfied with their simulation experience contributes to the motivation to put into practice what they have learned.[25]

High satisfaction levels are associated with increased student autonomy,[26] to the ability to make decisions and solve problems[27] and the more motivated they are with teaching, the greater the ability to build their learning, to develop personal learning plans, to find resources to invest in their study, and to be more proactive in self-assessment.[28]

Students feel simulated clinical experiences allow them to develop structured thought since the practice in urgency/emergency is linked to performance algorithms, with the advantage of being able to set priorities and to complete a more controlled, quieter and systematized practice.

The realism of the scenarios, their surroundings, and the fact that they try to solve extreme situations makes students very anxious. However, they consider that all the pressure experienced in the simulated practice is positive in helping them to control real life stress, as active elements in the stabilization and recovery of the health condition of patients.

The stressful environment of real life and all the aggressive stimuli that are experienced by nursing students in clinical teaching and by nurses in their workplace, are controlled in a simulated context, since this is a safe and virtually risk-free environment, where you can go wrong without fear of complex situations.[29,30]

In Kelly's study, students (92.91%) consider that the school provides conditions for safe simulated practice and this way of learning is more active.[31] Simulation allows students to improve performance from their mistakes, learning from their failures until they are able to do it, which is unacceptable in a real situation. Learning in a secure environment allows students to ask "stupid" questions, to talk about what they do not understand and share what they understood.[32]

4.2 Relationship with simulation peers

In the context of simulated practice and because they experienced the scenarios in groups, students consider this teamwork strengthens their relationship and that because they have a common goal during the scenario, it helps them to concentrate more on the resolution of adverse events. When working in teams, the students learn to trust each other as members of a team and collaborate with each other.[4,33]

The resolution of problems that arise during simulated experiences can and should be done as a collaborative practice,[34] since in a real context the performance will be similar.

The fact that they perform the scenarios in a group of students, either carrying out the practice or observing, contributes to students feeling they are revealing their skills or difficulties in solving scenarios to colleagues.

In Parker and Myrich's study, students who were being observed had feelings of fear, anxiety and worry about the practices.[35] They feel that they are always being assessed and that, despite it being the teacher who assigns a rating, the evaluation done by peers is the most important. Revealing their skills to the group is perceived by students as a test and that their performance is inevitably criticized by colleagues.[36] Peer review can contribute to continuous learning when there is respect, objectivity, solidarity and a stable environment.[37] Students need to reflect together on the situations they experience either as participants or as observers,[38] since in the real context, the patient, their family members, colleagues and all those who share the same space, observe and evaluate their practices.

Teachers play a very important role in this process of clarifying with the students that everyone can make mistakes and it is normal to err; that joint reflections contribute to the enrichment of all; that the goal is not to evaluate colleagues and outside the simulation space they should not comment on the mistakes of others.[39] In other words, the preparation for the simulation and the methodological rigor of the debriefing is extremely important.

4.3 High-fidelity simulated practices

The experience of a high-fidelity simulated practice is considered by students as realistic and objective, if it stimulates

their skills and if reflection on the action is associated. Although they are aware that the simulation experience is not the same as the practice in a real context, students feel that it was quite realistic, due to the similarity to patients in the physiological responses provided by the simulators and all the background created in the scenarios.

These limitations which were identified by the students focused mainly on non-verbal communication and the failure to assess some neurological reflexes in the simulator[4] did not prevent students from considering that simulation could replace the clinical teaching.[31]

As Johnson states, it is essential that participants understand the realism of simulated practices as important for their learning and relevant to clinical practice.[40] Rettedal adds that the less clinical experience students have, the more realistic their simulated experience should be.[41]

Patricia Benner calls our attention to the need to involve students in experiences that represent reality, so that they learn to use the knowledge and develop thinking in different situations of clinical practice.[42]

Associated with this realism, the students feel that HFS is objective because they can see the results of their actions, weather they are badly or well executed. All the actions are followed by a reaction from the simulator and there is no need for the teacher to replace the patient ("simulator") when voicing its health /disease situation.

Students see HFS as a strategy that stimulates their skills, because it develops critical thinking and clinical judgment. With HFS the student feels the need to reflect with colleagues on their practices and that he/she is the producer of his/her knowledge. This construction of knowledge and the use of reflection allow for a more meaningful learning and the ability to expose the student to achieve and implement their ideas in the real context.[43]

Students consider that reflecting on their practices is as important as the practice itself. Debriefing after simulated practices is an essential component for students,[44] it is important to clarify the theory, develop reasoning and prepare students for clinical practice.[45]

Students value the reflection after practices[31] because they contribute to the resolution of problems that patient present.[45] Irrespective of the different experiences of debriefing (with or without auxiliary video), all are equally important for learning.[46] When there is no debriefing or it is mishandled, learning does not occur[42] and clinical judgment is poor.[47]

Debriefing is so important that it should be included throughout the nursing curriculum and not only in simulated practice thus promoting more reflective practitioners, who are so needed in current health care.[48]

4.4 Future expectations with the high-fidelity simulation

With high-fidelity simulated practice students are more confident about their future, since they feel better prepared, because the practice developed may be applied in the real context and because they feel more confident in their abilities to intervene. It is important to have confidence in the learning process because it helps overcome the challenges posed in making complex decisions.[49]

In Relly and Spratt's study, students believe that HFS has increased their confidence before clinical practice and may contribute to improve their competence in real context.[50] Making mistakes in a controlled environment and learning from them without the fear of harming a real patient, help increase their confidence in the future.[51]

Students realize that simulation increases their capacity to intervene in a real situation,[21] that it develops their skills, confidence and readiness in acting,[52] they develop skills in interpreting and prioritizing the information collected in the scenarios, they draw intervention plans and evaluate the experiences.

The new generation of students expects HFS to be included in the curriculum.[53] They realize that through this teaching strategy, they are gaining more knowledge and transferring it to clinical practice[31] and that they feel better prepared for the labor market.

5. Conclusions

High-fidelity simulation is increasingly a reality in nursing schools. In this research we tried to identify the meanings attributed to the experiences with high-fidelity simulation by students and understand its influence in their training. This study identified different perceptions of students after experiencing realistic scenarios in a controlled environment, its importance to the establishment of relations and mutual growth and its relevance for their future as students and future professionals. Recognizing that these simulated clinical experiences exert different influences on students in building their learning, it is necessary to produce more evidence focused on different contexts and at different levels of education.

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Conflicts of Interest Disclosure

The authors declare that there is no conflict of interest.

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