









## Evaluating the “satisfaction” and “self-confidence” in nursing students in undergoing simulated clinical experiences

Avaliação da “satisfação” e “autoconfiança” em estudantes de enfermagem que vivenciaram experiências clínicas simuladas

Evaluación de la “satisfacción” y “autoconfianza” en los estudiantes de enfermería que vivieron experiencias clínicas simuladas

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### ABSTRACT

**Objective:** To evaluate the “satisfaction” and “self-confidence” constructs in nursing students who underwent simulated clinical experiences in semiology and semiotechnique disciplines. **Method:** A descriptive study developed with Nursing students from a federal public university in the interior of Minas Gerais through weekly simulated workshops. The “satisfaction” and “self-confidence” constructs were evaluated by the “Student Satisfaction and Self-Confidence with Learning Scale” and “Simulated Clinical Experiences Satisfaction Scale”. **Results:** The final sample was 45 students. Most were more satisfied (overall average = 4.18) than self-confident (overall average = 4.12). The Spearman correlation test identified a significant and positive association between the “satisfaction” and “self-confidence” constructs. **Conclusion:** Students feel self-confident and satisfied with the use of simulation as an active teaching-learning methodology, highlighting that the higher the satisfaction level, the greater the student’s self-confidence.

### DESCRIPTORS

Learning; Students, Nursing; Education, Nursing; Simulation Training.

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## INTRODUCTION

Despite the advancement in nursing as a science in recent years, the technical dimension of the profession's knowledge continued to grow through the process of repeated imitation, in which learners practiced and improved performance on patients and sometimes themselves or their fellow students<sup>(1)</sup>. However, technological advancement and the concern with preserving patient integrity led to the need to innovate practical teaching methodologies<sup>(2)</sup>. In this context, Nursing is experiencing a time when traditional teaching methods have given way to implementing new active teaching methodologies, especially the use of simulation<sup>(3)</sup>.

Simulation provides real care experiences by solving case scenarios which reflect everyday clinical practice situations in a controlled environment, with the practices being performed on simulated dummies or standardized patients who are duly trained actors, interactively for the group, streamlining the teaching and learning process<sup>(4)</sup>. In order to be successful, participants must legitimately, authentically and realistically face the experience of the simulated scenario<sup>(5)</sup>.

Practical nursing teaching through simulation provides nursing training so that they will be able to delegate, prioritize, manage care and make decisions autonomously and collaboratively with other professionals. Simulation enables developing communication between professionals and patients, and between professionals themselves, since the student develops the ability to organize ideas, infer facts and elect the information necessary to report to the professionals involved<sup>(6)</sup>.

Another benefit pointed out by the use of simulation in teaching refers to developing critical and reflective capacity of nurses, since it allows the student or professional who experienced the simulated scenario to reflect on their performance, identifying the right actions and where they need to improve their performance in clinical practice. It also allows an association of theory with practice, facilitating the transition process from being a student to being a professional<sup>(6)</sup>.

The use of simulation in nursing education provides quality care to assisted patients, promotes the development of self-confidence and increases the learner's satisfaction levels. The evaluation of these constructs has been of interest to researchers<sup>(5)</sup>.

Satisfaction can be understood as the feeling of pleasure or disappointment resulting from comparing the performance obtained in relation to the person's expectations<sup>(7)</sup>. It is an important result, as it is associated with greater involvement and motivation for learning<sup>(3)</sup>. Self-confidence means certainty of the subject that they are capable of doing or achieving something, meaning that it translates the individual's competence to reach their own goals<sup>(8)</sup>. Confident students will have their own and collective benefits, in addition to contributing to the quality indices of educational institutions<sup>(5)</sup>. Scales have been developed for evaluating these constructs<sup>(3,5)</sup>.

In the search for innovative teaching methods to streamline and improve the teaching-learning process, Nursing professors at a federal public university in the countryside of

Minas Gerais have been working to use simulation to teach the skills inherent in nursing practice since the second semester of 2015. These skills include contents of the semiology and semiotechnique subjects. Students have reported that using simulation has greatly facilitated learning, and that this methodology has aroused greater interest in them. However, no study has been conducted so far to measure the satisfaction and self-confidence levels of these students using this teaching methodology. It is believed that using instruments which are capable of measuring the gains provided to individuals trained in a simulated environment may contribute to strengthening this teaching strategy, as well as to its improvement.

Given the above, this study aimed to evaluate the “satisfaction” and “self-confidence” constructs in nursing students who underwent simulated clinical experiences in learning semiology and semiotechnique disciplines.

## METHOD

### STUDY DESIGN

This is a descriptive study which evaluated the “satisfaction” and “self-confidence” constructs in nursing students who underwent simulated clinical experiences in learning semiology and semiotechnique disciplines.

### POPULATION

The study population consisted of 52 undergraduate Nursing students from a federal public university in the interior of Minas Gerais, enrolled in the semiology and semiotechnique subjects during the data collection period. The study was developed at the Nursing Skills Laboratory of the Department of Medicine and Nursing of the university under study. The laboratory is equipped with low and medium fidelity simulating dummies, which enable the practical teaching of contents related to data collection and nursing interventions, taught in the semiology and semiotechnique disciplines.

The study included students who agreed to participate and who were present in the laboratory during the entire performance of the simulated scenario. Exclusion criteria were students who had previous experience in treating patients in clinical practice. The final sample consisted of 45 students.

### DATA COLLECTION

Data collection was performed from August 2016 to June 2017, thus comprising the period in which the theoretical-practical teaching of the semiology and semiotechnique subjects were provided, according to the course curriculum. The teaching method used in the subjects followed the steps: availability of the student to do the compulsory reading material prior to the theoretical class; dialogued exposition on the theoretical concepts necessary for the development of each nursing skill; practical demonstration by the teacher of Nursing procedures on simulating dummies or actors (when it was not an invasive procedure); previous construction of the curriculum guide, containing the script

for performing the simulated scenario of each skill taught, as well as the student assessment checklist; preparation of the simulated environment and training of actors, where relevant; development of the simulated scenario one calls “simulated workshops”; and debriefing. It is noteworthy that the simulated scenario scripts were built by the teachers involved in the semiology and semiotechnique subjects and contained the following items: scenario objectives, necessary resources (materials, human and infrastructure), and evaluative checklist so that the teacher could evaluate student performance during the scenario development. The performance time was defined according to the complexity of the objectives of each scenario.

Debriefing was developed following the stages: emotional, to identify the feelings experienced by the student during the simulation activity; descriptive, to assess the student’s understanding of the experienced clinical situation; evaluative, to instigate the student’s self-assessment and expression of the positive actions taken in the scenario; analytical, to instigate the student’s self-assessment and to express what they would do differently if given another opportunity; conclusive, for the student to express what they internalized from learning the simulated experience to future clinical practice<sup>(9)</sup>.

The simulated workshops were held weekly for each content taught. Each student experienced at least three simulated workshops during the research data collection period. The “satisfaction” and “self-confidence” constructs were evaluated at the end of the semester and before the students’ insertion in the practice field with real patients using the following scales: “Student Satisfaction and Self-Confidence with Learning Scale”<sup>(5)</sup> and the “Satisfaction with Simulated Clinical Experiences Scale (ESECS)”<sup>(3)</sup>.

The Student Satisfaction and Self-Confidence with Learning Scale assesses the “satisfaction” and “self-confidence” constructs regarding the simulation technique using a five-point Likert scale, where 1 = “I strongly disagree with the statement”, 2 = “I disagree with the statement”, 3 = “I do not agree or disagree with the statement”, 4 = “I agree with the statement” and 5 = “I strongly agree with the statement”. The scale is made up of 13 items, of which five are for evaluating the “satisfaction” construct and eight for the “self-confidence” construct. The higher the score, the higher the satisfaction and self-confidence levels. This scale was applied to a sample of 103 nurses in a validation study for the Portuguese language, and the findings indicated that it has good psychometric properties. Cronbach’s alpha value was 0.84, indicating that the scale has good internal consistency<sup>(5)</sup>. The Cronbach’s alpha value in this study was 0.72 for the studied sample (n = 45).

The ESECS is composed of 17 statements, in which the student expresses their opinion about each one on a Likert scale ranging from one to 10, where a value of one represents the lowest level of satisfaction, and 10 as the highest level of satisfaction. These 17 items assess satisfaction with a simulated clinical experience in three dimensions: practice (nine items), realism (five items), and cognitive (three items). The findings in the scale validation study conducted with 181 students indicated that it has good psychometric properties. The Cronbach’s alpha value was 0.91, indicating that the

scale has a good internal consistency<sup>(3)</sup>. The Cronbach’s alpha value in this study was 0.92 for the studied sample (n = 45).

It should be clarified that two scales were used to measure the construct “satisfaction”, due to the specificity of the items which evaluate this construct in each of the scales.

## DATA ANALYSIS AND PROCESSING

Data were entered and analyzed using Microsoft Office Excel 2016, using descriptive and inferential statistics. The items on the Student Satisfaction and Self-Confidence with Learning Scale were analyzed by mean, standard deviation, absolute and percentage frequencies. The ESECS items were analyzed by mean, standard deviation, median, maximum and minimum values. Spearman’s correlation test was used to assess the existence of correlation between the “Self-confidence” and “Satisfaction” constructs, considering a confidence interval of 95%.

## ETHICAL ASPECTS

This research project complied with the ethical precepts of Resolution 466/2012 of the National Health Council on research involving human subjects, having approval prior to execution by the competent University Research Ethics Committee (ETIC Opinion No. 1.955.983/17). Students were informed about the research objectives at the beginning of the course, and those who consented to participate in the study and who met the inclusion criteria were asked to sign the Informed Consent Form.

It is noteworthy that any student who did not meet the inclusion criteria of the study or who refused to participate did not suffer any impairment in their teaching-learning process, as they were taught using the same teaching methodology and evaluation criteria used with the students who were part of the study.

## RESULTS

Descriptive statistics enabled analyzing the scores of the students’ “satisfaction” and “self-confidence” constructs with the simulated clinical experiences used to teach nursing skills which are part of the semiology and semiotechnique disciplines.

Table 1 shows the student satisfaction and self-confidence level in learning acquired from simulated clinical experiences and measured using the Student Satisfaction and Self-Confidence with Learning Scale.

An analysis of Table 1 allows one to infer that students were more satisfied (overall average = 4.18) than self-confident (overall average = 4.12) overall.

The best evaluated items for the “Self-Confidence” construct (average = 4.51) were the use of useful resources to teach the simulation and the student’s self-responsibility in identifying what they need to know from the simulated activity. More than half of the students (25 – 55.6%) fully agreed with these statements. On the other hand, the item with the lowest average score (3.40) referred to the student’s confidence in the mastery of the content addressed in the simulated activity.

The item with the highest average score (4.53) for the “Satisfaction” construct referred to the way the teacher taught by simulation. Most students (42 – 93.3%) agreed that they liked the use of simulation as a teaching methodology. Nevertheless, the items with the lowest grade were those related to how the didactic materials used promoted and

motivated the learning, even though it received a high average score (4.18).

The “Satisfaction” construct could also be assessed considering the practical activity, realism and cognitive dimensions using the ESECS, in which the closer to ten, the greater the student’s degree of satisfaction with learning (Table 2).

**Table 1** – Descriptive statistics of the assessment items of the “Satisfaction” and “Self Confidence” constructs using the Student Satisfaction and Self-Confidence with Learning Scale – Viçosa, MG, Brazil, 2017.

Scale items	Mean (SD)	SD	D	I	A	TA
		n (%)	n (%)	n (%)	n (%)	n (%)
<b>“Satisfaction” construct</b>	4.18 (0.10)					
1. The teaching methods used in this simulation were useful and effective.	4.27 (0.53)	-	-	2 (4.44)	29 (64.4)	14 (31.1)
2. The simulation provided me with a variety of teaching materials and activities to further my learning of the medical-surgical curriculum.	4.18 (0.76)	-	1 (2.2)	7 (15.6)	20 (44.4)	17 (37.8)
3. I liked the way my teacher taught using simulation.	4.53 (0.61)	-	-	3 (6.7)	15 (33.3)	27 (60.0)
4. The teaching materials used in this simulation were motivating and helped me learn.	4.18 (0.73)	-	1 (2.2)	6 (13.3)	22 (48.9)	16 (35.6)
5. The way my teacher taught through simulation was appropriate for the way I learn.	4.24 (0.79)	-	1 (2.2)	7 (15.6)	17 (37.8)	20 (44.4)
<b>“Self-confidence” construct</b>	4.12 (0.17)					
6. I am confident that I master the content of the simulation activity introduced by my teacher.	3.40 (0.80)	1 (2.2)	5 (11.1)	15 (33.3)	23 (51.1)	1 (2.2)
7. It is the teacher’s responsibility to tell me what I need to learn about the theme developed in the simulation during class.	3.96 (1.07)	2 (4.4)	1 (2.2)	12 (26.7)	12 (26.7)	18 (40.0)
8. I know how to use simulation activities to learn skills.	3.98 (0.68)	-	-	11 (24.4)	24 (53.3)	10 (22.2)
9. I am confident that this simulation included the content needed to master the medical-surgical curriculum.	4.13 (0.90)	1 (2.2)	3 (6.7)	1 (2.2)	24 (53.3)	16 (35.6)
10. I know how to get help when I don’t understand the concepts covered in the simulation.	4.24 (0.67)	-	-	6 (13.3)	22 (48.9)	17 (37.8)
11. I am confident that I am developing skills and gaining the necessary knowledge from this simulation to perform the necessary procedures in a clinical setting.	4.27 (0.61)	-	-	4 (8.9)	25 (55.6)	16 (35.6)
12. My teacher used useful resources to teach simulation.	4.51 (0.50)	-	-	-	22 (48.9)	23 (51.1)
13. It is my responsibility as a student to learn what I need to know through the simulation activity.	4.51 (0.58)	-	-	2 (4.4)	18 (40.0)	25 (55.6)

SD – Standard deviation; SD – Strongly Disagree; D – Disagree; I – Indifferent; A – I agree; SA – Strongly Agree. Note: (n=45)

**Table 2** – Descriptive statistics of the satisfaction construct by dimension using the ESECS for the theoretical-practical teaching of the semiology and semiotécnique subjects – Viçosa, MG, Brazil, 2017.

Items	Mean	Standard deviation	Median	Maximum	Minimum
<b>Practical Activity Dimension</b>	<b>8.5</b>	<b>0.1</b>	<b>8.5</b>	<b>10</b>	<b>3</b>
Satisfaction with the learning achieved	8.1	1.3	8.0	10	6
Overall satisfaction with practical classes	8.2	1.2	8.0	10	5
Active participation in developed scenarios	8.2	1.4	8,5	10	5
Productivity during practical classes	8.3	1.3	9.0	10	5
Motivation when coming to practical classes	8.5	1.2	8.5	10	6
Satisfaction with the degree of difficulty of the scenarios	8.8	1.1	8.5	10	6
Dynamism of practical classes	8.8	1.2	9.0	10	5
Interaction with colleagues	8.8	1.4	9.0	10	3
Interaction with teachers	9.2	1.2	8.0	10	4
<b>Realism Dimension</b>	<b>8.8</b>	<b>0.2</b>	<b>8.0</b>	<b>10</b>	<b>3</b>
Quality of equipment used in practice	8.8	1.3	8.0	10	3
Realism of developed scenarios	8.8	1.0	8,5	10	7
Quality of material used in practice	8.9	1.1	8.0	10	6
Credibility during the scenario	9.0	1.0	8.0	10	6
Simulator Quality	9.0	0.8	8.0	10	7
<b>Cognitive Dimension</b>	<b>8.7</b>	<b>0.2</b>	<b>8.7</b>	<b>10</b>	<b>6</b>
Satisfaction with post-scenario discussion (debriefing)	9.0	1.2	9.5	10	6
Adaptation to the themes developed in the theoretical-practical classes	9.3	0.9	8.0	10	7
Linking scenarios to theory	9.4	0.8	8.0	10	7

Note: (n=45)



According to Table 2, “realism” was the dimension which showed the highest average satisfaction (8.8), followed by the “cognitive” dimension (8.7) and the “practical activity” dimension (8.5).

The quality of the simulators and the credibility during the scenario presented a higher average of satisfaction (9) in the “realism” dimension, but the item quality of the simulators had a lower standard deviation around the average. The item assessed as the highest level of student satisfaction belonged to the “cognitive” dimension and refers to the linking of scenarios to theory. In the “practical activity” dimension, the interaction with the teachers presented the best average score (9.2). It is noteworthy that the item with the lowest score regarding student satisfaction with learning refers to satisfaction with the learning achieved (average = 8.1).

The existence of an association between the “Satisfaction” and “Self-confidence” constructs was investigated (Table 3).

**Table 3** – Spearman’s correlation test for assessing the association between the “Satisfaction” and “Self-confidence” constructs – Viçosa, MG, Brazil, 2017.

	Self-confidence (Spearman’s Rho)	P-value
Satisfaction (ESECS)	0.45	0.002
Satisfaction (Student Satisfaction and Self-Confidence with Learning Scale)	0.35	0.017

Note: (n=45)

Considering a confidence interval of 95% in the studied sample, an analysis of Table 3 allows one to infer that there was a positive association between the “Self-confidence” and “Satisfaction” constructs ( $r = 0.354$ ,  $p = 0.017$ ) as evaluated by the Satisfaction of Students and Self-confidence with Learning Scale, and between the “Self-confidence” and “Satisfaction” constructs, with the latter assessed by the ESECS ( $r = 0.457$ ,  $p = 0.002$ ). Thus, it can be stated that the more self-confident, the more satisfied students are with simulated clinical experiences.

## DISCUSSION

This study evaluated the “satisfaction” and “self-confidence” of nursing students after experiencing simulated clinical experiences in learning semiology and semiotechnique subjects. The analysis of these constructs using the “Student Satisfaction and Self-Confidence with Learning Scale” (Table 1) showed that students were overall more satisfied (average = 4.18) than self-confident (average = 4.12). Likewise, studies using the same scale showed similar results<sup>(10-14)</sup>.

A Brazilian study was conducted to compare satisfaction and self-confidence using the “Student Satisfaction and Self-Confidence with Learning Scale” in 100 nursing students who participated in simulated clinical activities in scenarios with and without the presence of odors. The developed scenarios included nursing care for patients with vomiting due to gastric disorders, diaper intestinal elimination, infected skin lesion and colostomy care. The results indicated that the students were more satisfied (average = 4.6) than self-confident (average = 4.2), and there was no

significant difference between the groups that participated in the simulated activity with or without the presence of odors. Nevertheless, the participants pointed out that the use of odors helped them to pay attention to the need for using personal protective equipment and the use of non-verbal language during care<sup>(10)</sup>, pointing out the importance of using this methodology for retaining this knowledge.

A simulation was used in a study with 61 beginner nursing students from a college in the United States to train pediatric nursing practices in clinical, home, school and church contexts. The results after the simulation showed that the overall average score for the “Satisfaction” construct was 4.10 and the “Self-confidence” construct was 4.00. The authors reinforced how important the use of simulation was to enable the learner to practice in different care contexts, which would probably be impossible in real clinical practice. Thus, the simulation contributed to a more effective learning of beginners in simulated clinical contexts<sup>(11)</sup>. Another study was conducted in the same country in a cardiovascular specialty hospital in which the simulation was similarly used to train 33 intensive care nurses in providing care to patients who developed cardiac arrest during cardiac surgery with sternal opening. The results showed that nurses felt more satisfied (average = 4.92) than self-confident (average = 4.77) at the end of the training. Simulation was identified as an important method for providing team members with experience, knowledge and skills to competently and reliably manage events that imply an imminent risk of death<sup>(12)</sup>.

Corroborating these results, another Brazilian study evaluated the satisfaction with learning and self-confidence of 47 students who had simulated clinical experiences in maternal and child care scenarios. The simulated clinical cases involved: care for pregnant women with preeclampsia, newborn resuscitation, infant pneumonia, premature traumatic placental detachment, violence against women, and family planning consultation. The average classifications for the evaluated constructs ranged from 3.51 to 4.12, indicating good satisfaction and self-confidence towards the learning in the maternal and child area. The authors recommend that this type of study be replicated in other disciplines which use simulation as a teaching method<sup>(13)</sup>.

A recent American study evaluated the perception of 199 first and second year nursing students on educational practices using simulation, as well as the satisfaction and self-confidence levels with simulated activities. The average of the “satisfaction” construct ranged from 4.21 to 4.30, and the “self-confidence” construct between 3.60 and 4.37. The simulation was found to be useful for preparing nursing students for clinical practice and increases student satisfaction and self-confidence levels with learning when properly conducted. The use of serial simulations throughout training seems to increase student confidence levels<sup>(14)</sup>.

It is essential that the student is an active agent in the teaching-learning process to achieve the expected results, and that they are co-responsible for their learning through self-criticism. In assessing the “Self-confidence” construct, most students (25 – 55.6%) totally agreed that they are responsible for identifying what they need to know from the

simulated activity to build their knowledge. Research has similarly shown that students felt critical of self-performance to improve outcomes, thus seeking to be active actors in the pursuit of knowledge improvement and construction<sup>(6,15)</sup>.

The item with the highest average score (4.53) for the “Satisfaction” construct by applying the Student Satisfaction and Self-Confidence with Learning Scale referred to how the teacher taught by simulation, and most students (42 – 93.3%) agreed that they liked the use of simulation as a teaching methodology (Table 1). International studies have similarly shown that students are more motivated to learn when simulation is used as a teaching methodology<sup>(16-17)</sup>. At the University of Gondar, the way the teacher taught by simulation was a source of satisfaction among most students in the obstetrics course (78 – 54.2%)<sup>(16)</sup>. The results of the 18-article meta-analysis conducted by researchers from the Seoul Department of Nursing at Sahmyook University suggest that simulation-based learning can have a positive impact on student motivation, influencing knowledge and the acquisition of clinical skills<sup>(17)</sup>.

The “satisfaction” construct could also be evaluated considering the “practical activity”, “realism” and “cognitive” dimensions using the ESECS. The “realism” dimension showed the highest average level of satisfaction (8.8), followed by the “cognitive” dimension (8.7) and the “practical activity” dimension (8.5). A study conducted in Brazil with nursing students to assess satisfaction with the simulated activity using the same measurement scale similarly found that the highest average satisfaction was found in the “realism” dimension (9.7), followed by the “cognitive” (9.4) and the “practical” dimension (9.2)<sup>(10)</sup>.

Credibility stands out among the items best evaluated by students in the “realism” dimension during the scenario. In this study, the use of standardized patients in which teachers assumed the role of patient is believed to have contributed to provide greater realism to simulated scenarios. The use of actors and high fidelity dummies promotes high teacher-student interaction, contributing to the student’s abstraction from the real clinical context and to apprehending the content taught<sup>(18)</sup>.

It is important that the simulated scenario is as close as possible to the actual care context. Therefore, it is essential to establish consistent objectives by the facilitator to characterize the context in which the simulation occurs, the fidelity which involves realism and authenticity and the moment of reflection which occurs in debriefing<sup>(19)</sup>. In addition, the greater the realism and complexity of the scenario, the greater the student engagement, as simulations enable students to be prepared for specific situations which may occur in real life. A study with 10 nursing residency program students from a large hospital in the southeastern United States showed that while simulations were described as being different from real life, nine out of 10 study participants reported that simulations prepared them for real-life care<sup>(20)</sup>.

The item assessed as the highest level of student satisfaction in the cognitive dimension referred to the connection of scenarios to theory. Simulation favors applying theory to clinical practice, enabling the construction of know-how,

which is so important for nursing practice. In addition, applying the theoretical knowledge acquired during training in the practice scenarios fosters resolving problems and developing the student’s clinical reasoning<sup>(6,21)</sup>. Simulation provides students with an overview of the patient, and how multiple factors such as laboratory results, imaging diagnostics, medication, family conflicts, and others, should be included in patient assessment for decision-making on best care practice<sup>(6,15,21)</sup>. Knowledge is best learned in students who experience simulation<sup>(22)</sup>.

The interaction with the teachers presented the best average score (9.2) in the “practical activity” dimension. Simulation is considered an active teaching methodology in which the teacher is seen as a learning facilitator. A study with 144 students from Gondar University similarly found that interaction with the teacher showed a satisfaction level with simulated activities among most participants (60 – 63.8%)<sup>(16)</sup>. This reinforces the teacher’s importance in planning and conducting the simulated activities, since creating and conducting the scenarios require intentionality matrices, which clearly establish the focus and the learning objectives<sup>(23)</sup>.

Moreover, it is noteworthy that students assume responsibility for the independent practice in a gradual way in the simulation, since they have the opportunity to practice the service and to make mistakes in a controlled environment. Thus, students feel confident as they develop and acquire psychomotor skills for clinical practice, perform procedures and provide care to patients in a crisis or deterioration scenario<sup>(6,17,21)</sup>. The ability to communicate with the patient and among team members can also be developed through simulation, helping to organize ideas and set priorities for reporting to other professionals<sup>(6,24)</sup>. Thus, the simulation contributes to the student’s transition process to the less teacher-dependent clinical practice, with less hesitation and greater accountability of patient care by the students<sup>(6,25-26)</sup>.

However, it should be noted that although satisfied, students’ satisfaction with their learning achieved a lower average score in this study (Table 2). Debriefing stands out among the simulation stages, which consists of a conversation between the facilitator and the participants of the simulation, aiming to resume the attitudes and actions developed throughout the scenario for reflection, which intends to favor the student’s growth. It is considered the most important moment in the simulation, as it will consolidate knowledge and skills already achieved, and those which still need to be achieved<sup>(5,27)</sup>. Thus, the importance of the debriefing moment is reinforced so that the teacher emphasize the positive points made by the student, enabling them to become aware of the learning achieved and to recognize the improvement needs which have to be met in order to increase their degree of satisfaction with the achieved learning.

The students in this study underwent simulated clinical experiences in learning semiology and semiotechnique disciplines. In the semiology discipline, the nursing student learns to collect data through anamnesis and physical examination and to use clinical reasoning to identify nursing diagnoses in patients. Simulation is an effective strategy for

developing clinical reasoning, as the learner participates in constructing their knowledge, which favors an increase in expertise in nursing diagnostic reasoning<sup>(28)</sup>. In the semiotechnique discipline, the nursing student learns to perform nursing interventions/procedures for resolving nursing diagnoses. A study conducted in southern Brazil showed that simulation contributes to developing relational and practical skills in students during the semiotechnique discipline. The development of relational skills was observed by the ability to work in teams and to establish necessary relationships for care. Practical skills were observed by the students' greater ability in performing nursing procedures<sup>(29)</sup>.

It is remarkable that no other studies evaluating the "satisfaction" and "self-confidence" constructs were found in nursing students who had simulated clinical experiences in semiology and semiotechnique disciplines. Thus, further studies are suggested to measure these constructs in this specific population. Nevertheless, it is emphasized that simulation favors the development of clinical reasoning<sup>(28)</sup> and the development of practical skills<sup>(29)</sup>, indicating that this methodology is useful for teaching in these subjects.

Finally, it is noteworthy that the instruments used in this study to measure the "satisfaction" and "self-confidence" constructs are valid and reliable, as shown in other studies<sup>(3,5,30)</sup>. An American study conducted to evaluate the reliability and validity of instruments used in the simulation, including the "Satisfaction and Self-Confidence with Learning Scale", was conducted with 2,200 nursing students. The results showed that this is a reliable and valid scale. The overall Cronbach's alpha coefficient for the scale was 0.92, and the correlation coefficient between the constructs evaluated on the scale was 0.78<sup>(30)</sup>. The findings in the validation study for the Portuguese language of this same scale indicated that it has good psychometric properties, and the Cronbach's alpha value was 0.84<sup>(5)</sup>. It also presented high

internal consistency in the validation study of the ESECS scale, and the Cronbach's alpha value was 0.91<sup>(3)</sup>. Thus, it can be said that these instruments are able to accurately measure the "satisfaction" and "self-confidence" constructs.

A limitation of the study was the low sample size ( $n = 45$  students), which makes it difficult to generalize the results regarding the satisfaction and self-confidence levels of students with simulated clinical experiences for teaching semiology and semiotechnique disciplines in other realities. Thus, a replication of the study is suggested in order to ratify the findings.

## CONCLUSION

This study enabled measuring the "satisfaction" and "self-confidence" constructs of nursing students at a public university with the simulated clinical experiences used in teaching the semiology and semiotechnique subjects. The results showed that students feel confident and agree that it is their own responsibility to know what needs to be learned through the simulation activity, making them active agents of their own learning process. Students were similarly satisfied with the use of simulation as an active teaching-learning methodology, especially with the way the teacher uses this teaching technology. The higher the level of self-confidence, the greater the student satisfaction.

The quality of the simulators obtained the highest average satisfaction in the realism dimension. Moreover, students were more satisfied with how simulated activities allow linking scenarios to theory in the cognitive dimension, while the highest level of satisfaction in the practical dimension was with the interaction with teachers.

Nevertheless, the findings of this study point to the importance of incorporating simulation as a methodology for teaching in the researched disciplines.

## RESUMO

**Objetivo:** Avaliar os constructos "satisfação" e "autoconfiança" em estudantes de Enfermagem que vivenciaram experiências clínicas simuladas no ensino de semiologia e semiotécnica. **Método:** Estudo descritivo, desenvolvido com estudantes do curso de Enfermagem de uma universidade pública federal do interior de Minas Gerais, através de oficinas simuladas semanalmente. Os constructos "satisfação" e "autoconfiança" foram avaliados pela "Escala de Satisfação de Estudantes e Autoconfiança com a Aprendizagem" e "Escala de Satisfação com as Experiências Clínicas Simuladas". **Resultados:** A amostra final foi de 45 estudantes. A maioria apresentou mais satisfeito (média geral = 4,18) do que autoconfiante (média geral = 4,12). Identificou-se pelo teste de correlação de Spearman uma associação significativa e positiva entre os constructos "satisfação" e "autoconfiança". **Conclusão:** Os estudantes se sentem autoconfiantes e satisfeitos com o uso da simulação como metodologia ativa de ensino-aprendizagem, destacando-se que quanto maior o nível de satisfação, maior a autoconfiança do aluno.

## DESCRITORES

Aprendizagem; Estudantes de Enfermagem; Educação em Enfermagem; Treinamento por Simulação.

## RESUMEN

**Objetivo:** Evaluar los constructos de "satisfacción" y "autoconfianza" en los estudiantes de enfermería que vivieron experiencias clínicas simuladas en la enseñanza de la semiología y semiotécnica. **Método:** Se realizó un estudio descriptivo, desarrollado con los estudiantes del curso de enfermería de una universidad pública en el interior de Minas Gerais, a través de talleres simulados sobre una base semanal. Los constructos de "satisfacción" y "autoconfianza" fueron evaluados por la "Escala Satisfacción de los Estudiantes y Autoconfianza con el Aprendizaje" y "Escala de Satisfacción con las Experiencias Clínicas Simuladas". **Resultados:** La muestra final estuvo compuesta por 45 estudiantes. La mayoría se presentó más satisfecha (media = 4.18) que autoconfiada (media = 4.12). Se identificó, a través de la prueba de correlación de Spearman una asociación significativa y positiva entre los constructos de "satisfacción" y "autoconfianza". **Conclusión:** Los estudiantes se sientan seguros y satisfechos con el uso de la simulación como una metodología activa del proceso de enseñanza-aprendizaje, destacando que el mayor nivel de satisfacción aumentó la confianza de los estudiantes.

## DESCRIPTORES

Aprendizaje; Estudiantes de Enfermería; Educación en Enfermería; Entrenamiento Simulado.



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