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Nursing students' satisfaction with simulated clinical experiences

A satisfação dos estudantes de enfermagem com as práticas clínicas simuladas
Satisfacción de los estudiantes de enfermería con las prácticas clínicas simuladas

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Abstract
Background: Simulated clinical experiences, also known as simulated clinical practices or simulation, are dynamic and challenging training activities that occur in a controlled environment using scenarios that recreate real-life clinical practice.
Objective: To examine nursing students' satisfaction with simulated clinical experiences.
Methodology: This quantitative descriptive-correlational study was conducted with 223 nursing students, using the *Escala de Satisfação com as Experiências Clínicas Simuladas* (ESECS; Satisfaction with Simulated Clinical Experiences Scale), which includes the Practical, Cognitive, and Realism dimensions.
Results: The total mean of global satisfaction with the simulated clinical experiences was 7.501 on a scale of 1 to 10. The socio-demographic characteristics and course year and contents were not predictors of satisfaction. On average, students were more satisfied with the Cognitive dimension and less satisfied with the Realism dimension.
Conclusion: Students are satisfied with simulated clinical experiences and understand their importance for acquiring skills and improving their ability to respond during clinical teachings in real-life contexts. For this reason, the theoretical, scientific, and practical investment in this teaching strategy is highly relevant.

Keywords: patient simulation; simulation training; personal satisfaction; students; nursing

Resumo
Enquadramento: As práticas clínicas simuladas, designadas por experiências clínicas simuladas ou simulação, são um processo formativo dinâmico e desafiador que decorre em ambiente controlado com recurso a cenários que recriam a realidade clínica.
Objetivo: Estudar a satisfação dos estudantes de enfermagem com as práticas clínicas simuladas.
Metodologia: Estudo descritivo-correlacional de abordagem quantitativa, com uma amostra de 223 estudantes de enfermagem. Aplicada a Escala de Satisfação com as Experiências Clínicas Simuladas (ESECS), constituída pelas dimensões: prática, cognitiva e realismo.
Resultados: A satisfação média global com as práticas clínicas simuladas, foi de 7,501 na escala de 1–10. As características sociodemográficas, ano curricular e conteúdos, não foram preditivos da satisfação. Os estudantes apresentam-se em média mais satisfeitos na dimensão cognitiva e menos satisfeitos na dimensão realismo.
Conclusão: Os estudantes apresentam-se satisfeitos com as práticas clínicas simuladas percecionando a sua importância para a aprendizagem, na aquisição de competências e maior capacidade de resposta no ensino clínico em contexto real. Tal reforça a pertinência do investimento, teórico, científico e prático, nesta estratégia de ensino.

Palavras-Chave: simulação de paciente; treino por simulação; satisfação pessoal; estudantes; enfermagem

Resumen
Marco contextual: Las prácticas clínicas simuladas, denominadas experiencias clínicas simuladas o simulación, son un proceso de formación dinámico y desafiante que tiene lugar en un entorno controlado y que utiliza escenarios que recrean la realidad clínica.
Objetivo: Estudiar la satisfacción de los estudiantes de enfermería con las prácticas clínicas simuladas.
Metodología: Estudio descriptivo-correlacional con enfoque cuantitativo, con una muestra de 223 estudiantes de enfermería. Se aplicó la Escala de Satisfacción con las Experiencias Clínicas Simuladas (ESECS), que consta de las siguientes dimensiones: práctica, cognitiva y realismo.
Resultados: La satisfacción global media con las prácticas clínicas simuladas fue de 7,501 en una escala del 1 al 10. Las características sociodemográficas, el año de estudio y los contenidos no predijeron la satisfacción. De media, los estudiantes se mostraron más satisfechos en la dimensión cognitiva y menos satisfechos en la dimensión realismo.
Conclusión: Los estudiantes se muestran satisfechos con las prácticas clínicas simuladas y son conscientes de su importancia para el aprendizaje, la adquisición de habilidades y una mayor capacidad de respuesta en la enseñanza clínica en un contexto real. Esto refuerza la pertinencia de la inversión teórica, científica y práctica en esta estrategia pedagógica.

Palabras clave: simulación de pacientes; entrenamiento de simulación; satisfacción personal; estudiantes; enfermería.

Introduction

Nursing knowledge seeks to meet society's growing health demands, particularly the need for safe and quality nursing care (Bortolato-Major et al., 2020; Raiol et al., 2020). Therefore, it is crucial to ensure new pedagogical approaches to training future nurses that increase students' motivation, involvement, and satisfaction and facilitate learning (Lucas et al., 2020).

Simulated clinical experiences in health education are a pedagogical strategy that promotes the development of different skills. This pedagogical strategy allows representing real-life experiences in a simulated environment, using scenarios that recreate clinical practice (Lucas et al., 2020; Vera & Martini, 2020). It helps students overcome difficulties, develop self-reliance, manage stress, and increase satisfaction (Boellaard et al., 2014). Considering the new challenges of focusing health education on students and the development of their training, simulation is viewed as a promising pedagogical strategy. This aspect justifies the development of this study with the purpose of adjusting the pedagogical strategies involved in the training of essential skills and competencies for clinical practice and investing in the quality and safety of nursing interventions.

The general objective of this study is to assess undergraduate nursing students' satisfaction with simulated clinical experiences. Its specific objectives are: (i) to identify 2nd-year and 3rd-year nursing students' satisfaction levels with simulated clinical experiences; (ii) to compare 2nd-year and 3rd-year nursing students' satisfaction levels with simulated clinical experiences; (iii) to analyze 2nd-year and 3rd-year nursing students' satisfaction level with simulated clinical experiences considering the socio-demographic characteristics of gender, age, and occupation (working students); and (iv) to analyze students' adaptation to and performance in simulated clinical experiences.

Research question

What is nursing students' satisfaction level with simulated clinical experiences?

Background

Simulated clinical experiences are dynamic and challenging training activities done in a controlled environment, using realistic and diverse scenarios that recreate real-life clinical contexts. Recognizing its advantages has led to the emergence of new pedagogical tools, such as medium- and high-fidelity simulators, virtual patient software, virtual reality, augmented reality, and serious games, with enormous potential for nursing education. These tools promote knowledge retention and clinical reasoning and increase satisfaction with learning experiences (Moura & Caliri, 2013). They can also be used individually or complement other simulation tools, creating a mixed reality that helps nursing students and health professionals learn and develop essential skills, thus promoting patient safety and improving the quality of care. Simulation-based education provides the opportunity to train communication skills and other essential skills for clinical practice in real-life settings (Bortolato-Major et al., 2020; Franzon et al., 2020; Raiol et al., 2020). They are an active teaching strategy based on interactive training, which complements conventional methods (Lucas et al., 2020; Raiol et al., 2020) and provides several opportunities for reflection, training, and receiving feedback from teachers, colleagues, and simulators (Franzon et al., 2020; Souza et al., 2020). Furthermore, simulation improves students' knowledge, increases satisfaction with learning, enhancing the value of this strategy (Lewis & Ciak, 2011), and fosters clinical reasoning, confidence levels, and decision-making in care practice (Lucas et al., 2020). Also, diversified learning scenarios increase students' knowledge and improve their performance (Mills et al., 2014; Raiol et al., 2020). The simulation and diversification of scenarios encourage the development of analytical and reflective skills, the acquisition of knowledge and other skills, and the development of students' confidence at each experience. Moreover, they encourage students' self-reliance, expression of feelings, and sharing of difficulties and emotions in a protected and safe environment, which will reflect on the quality and safety of care delivery (Baptista et al., 2014a; Bortolato-Major et al., 2020). Simulation realism fosters dynamism, interaction, sharing, and student involvement and satisfaction while promoting reflection in action (Moura & Caliri, 2013). It combines theory and practice, improves students' communication skills and interaction with teachers and colleagues, improves students' capacity to assess situations and their performance, and fosters students' decision-making, confidence, and transition to clinical practice as future nurses (Baptista et al., 2014a; Bortolato-Major et al., 2020; Souza et al., 2020). Simulation promotes safety, teamwork, ethical commitment, and knowledge update without replacing actual clinical practice (Mills et al., 2014). Thus, simulation-based teaching strategies are crucial for preparing students to work in clinical settings. Student satisfaction is a key indicator of the effectiveness of teaching strategies. This indicator is higher in simulation-based teaching than in conventional teaching due to the decrease in students' fear and anxiety associated with performing nursing interventions in real-life clinical practice (Boellaard et al., 2014). Thus, by combining theory and practice, simulation-based teaching fosters practical and relational skills and helps prepare health professionals to better meet each patient's needs and face the challenges and advances in the health area (Araya et al., 2017).

Methodology

This descriptive-correlational, cross-sectional, quantitative study was conducted with a non-probability convenience sample consisting of undergraduate nursing students attending the course units of *Clinical Practice* (CP) I (2nd-year students) and CP II (3rd-year students with previous

experience in simulated practices). The simulated clinical experiences in CP I and CP II were conducted at the Lisbon Red Cross Health Higher school's simulation center. They consisted of 100 contact hours each and followed a script of pre-defined scenarios based on the knowledge and skills acquired in the previous semesters. The simulation center environment, where the experiences occurred, has realistic materials and equipment and medium-fidelity simulators. Preparatory meetings were held with the different teachers (7) to create and analyze the script, with the indicators for resolving each scenario item, so as to minimize the bias of the teachers associated with each experiment. Each student simulated two scenarios individually, following the script for each case according to the steps of the nursing process and safe care. The scenarios focused on Medical-Surgical Nursing (2nd year) and Maternal and Obstetric Nursing and Child Health Nursing and Pediatrics (3rd year). Group discussion and sharing happened following the feedback given after each scenario was completed. The scenarios were resolved with the help of one teacher for every 12 students. It was based on the nursing process methodology, the promotion of reasoned decision-making, the prioritization and humanization of care to the patient and family, and the encouragement of teamwork, leadership, and assertive communication.

The inclusion criterion was the participation of all students enrolled in the undergraduate course units of CP I and II. In the simulated clinical experiences, all students had the same conditions for resolving the scenarios and equal opportunities for participating and learning. Also, all students had to have successfully completed the previous course units.

The sample consisted of 223 nursing students who met the inclusion criterion from 2018 to 2021. All ethical principles inherent to this type of research were respected. Authorization was requested from the scale authors, the Institution's Board of Directors, and the School's Ethics Committee (favorable opinion no. 8/2018). The data collection instrument used was the *Escala de Satisfação com as Experiências Clínicas Simuladas* (ESECS; Satisfaction with Simulated Clinical Experiences Scale), validated by Baptista et al. (2014b). The scale consists of three dimensions: the Practical dimension, the Cognitive dimension, and the Realism dimension. It has 17 items rated on a Likert-type scale ranging from 1 (lowest satisfaction) to 10 (highest satisfaction), allowing students to express their opinion about simulated clinical experiences. In addition to socio-demographic data (age, gender, occupation, course year and semester, and name of the course unit), two questions were included regarding the students' adaptation and performance in the simulated clinical experiences. Data were collected in class after each CP was completed, before the course unit evaluation was concluded, and with a teacher present. Anonymity was guaranteed. Before data collection, the teacher responsible for the CP was contacted, and informed consent was requested from all students. The data anonymity and confidentiality were ensured. Data

were collected in six different moments, three during 2nd-year classes and the other three in 3rd-year classes, at the end of each CP, considering the development of the course units using simulation. Data were processed using the IBM SPSS Statistics® software, version 26.0.

Results

This sample consisted of 223 nursing students: 99 (44%) 2nd-year students attending the course unit CP I – Medical-Surgical Nursing; and 124 (56%) 3rd-year students attending the course unit CP II - Maternal and Obstetric Nursing and Child Health Nursing and Pediatrics. Both course units used medium-fidelity simulators. In terms of gender, 82.8% ($n = 82$) of the students attending CP I were women and 17.2% ($n = 17$) were men, and in CP II, 87.1% ($n = 108$) were women, and 12.9% ($n = 16$) were men. The Kolmogorov-Smirnov Goodness of Fit Test concluded that the sample does not follow a normal distribution (0.001). Therefore, non-parametric statistics were used. The Mann-Whitney U test compared the participants' gender in CP I and CP II with the level of satisfaction. It found no statistically significant differences ($p = 0.787$; U=2887.000), which allowed concluding that gender is not a predictor of satisfaction in this study ($p > 0.05$). The students' mean age was 23.465 years ($SD = 6.201$) in CP I and 23.585 years ($SD = 4.879$) in CP II. Spearman's rank correlation ($r_s = 0.125$) found that age is not a predictor of satisfaction because the differences were not statistically significant ($p > 0.05$). Regarding professional occupation, 73.7% ($n = 73$) of the students attending CP I were full-time students, and 26.23% ($n = 26$) were working students. In CP II, 72.6% ($n = 90$) were full-time students, and 27.4% ($n = 34$) were working students. No statistically significant differences were found in the Mann-Whitney U test ($p = 0.508$ showing that occupation (student or working student) is not a predictor of satisfaction in this study ($p > 0.05$). Table 1 shows the satisfaction levels of 2nd- and 3rd--year students with simulation learning. On average, 2nd-year students (CP I) and 3rd-year students (CP II) were more satisfied with the Cognitive dimension (CP I - $M = 7.619$; $SD = 1.56$; CP II - $M = 7.683$; $SD = 1.30$) and less satisfied with the Realism dimension (EP I - $M = 7.423$; $SD = 1.63$; $M = 7.340$; $SD = 1.45$). The Mann-Whitney U test for independent samples examined the differences between 2nd-year (CP I) and 3rd-year (CP II) students' satisfaction with each ESECS dimension and the ESECS Global satisfaction score. No statistically significant differences were found in the distribution of each dimension or the dimensions' total score between CP I and CP II ($p < 0.05$). In this sample, the "course year" or the "course contents" covered in both CP course units are not predictors of satisfaction with simulated clinical experiences. The total mean score of global satisfaction with using simulation in CP course units was 7.501 ($SD = 1.231$).

Table 1

Results of the Mann-Whitney U test regarding the satisfaction of 2nd-year (CP I) and 3rd-year (CP II) students with simulated clinical experiences

Dimension	n	Min.	Max.	Med.	M	SD	U	Z	p
Practical									
CP I	99	2	10	8	7.42	1.24	6700.00	1.569	0.117
CP II	124	5	9	8	7.64	1.02			
Total	223	2	10	8	7.55	1.127			
Cognitive									
CP I	99	1	10	8	7.62	1.56	6003.50	0.055	0.956
CP II	124	3	10	8	7.68	1.32			
Total	223	1	10	8	7.66	1.43			
Realism									
CP I	99	1	10	8	7.42	1.63	5700.50	-0.791	0.429
CP II	124	2	10	8	7.34	1.45			
Total	223	1	10	8	7.38	1.53			
Global satisfaction									
CP I	99	1	10	8	7.45	1.35	6089.00	0.477	0.634
CP II	124	4	10	8	7.54	1.13			
Total	223	1	10	8	7.50	1.23			

Note: n = Sample number; Min = Minimum; Max = Maximum; *Med* = Median; *M* = Mean; *SD* = Standard deviation; *U = Mann-Whitney test*; *Z* = Wilcoxon test; *p* = Significancy.

Table 2 presents the results of administrating the ESECS in CP I and CP II. Regarding the Practical dimension, in CP I, the mean values varied between 6.93 in item 3 – "Motivation to attend practical classes" and 7.96 in item 2 - "Learning achieved". In CP II, they varied between 7.15 in item 8 – "Satisfaction with the difficulty level of the scenarios" and 7.98 in item 2 - "Learning achieved". In both CPs, the item *Learning achieved* had the highest scores, showing that students recognize this teaching strategy as necessary for their learning and skill acquisition before going to clinical teachings in real-life settings.

In the Cognitive dimension, the mean scores of CP I ranged from 7.37 in item 12 – "Appropriateness to the themes developed in TP classes" to 7.86 in item 11 – "Link between scenarios and theory". In CP II, the lowest mean score was also found in item 12, with 7.60, and the highest in item 11 – "Link between scenarios and theory", with a score of 7.74.

The Realism dimension had mean scores ranging from 7.24 in item 14 – "Credibility during the scenario" to 7.592 in item 17 - "Quality of the simulators" in CP I. In CP II, the mean scores ranged from 7.20 in item 16 – "Quality of the equipment used in the practicums" to 7.41 in Item 14 – "Credibility during the scenario". Considering the differences in the mean and standard deviation, data values were not largely scattered around the mean.

Table 2

Descriptive statistics of the ESECS (CP I [n = 99]; CP II [n = 124])

	Min/Max		*Med*		*M*		*SD*	
Dimension	CP I	CP II	CP I	CP II	CP I	CP II	CP I	CP II
Practical								
1. Global satisfaction with practical classes	1/10	2/10	8.0	8.0	7.40	7.46	1.70	1.45
2. Learning achieved	5/10	5/10	8.0	8.0	7.96	7.98	1.15	1.28
3. Motivation to attend practical classes	1/10	4/10	7.0	8.0	6.93	7.43	2.00	1.59
4. Dynamics of practical classes	1/10	5/10	8.0	8.0	7.53	7.97	1.75	1.22
5. Active participation in the scenarios developed	3/10	3/10	7.0	7.0	7.3	7.54	1.47	1.28
6. Interaction with colleagues	1/10	5/10	8.0	8.0	7.50	7.52	1.55	1.14
7. Interaction with teachers	1/10	4/10	8.0	8.0	7.69	7.73	1.64	1.33
8. Satisfaction with the difficulty level of the scenarios	1/10	1/10	7.0	7.0	7.10	7.15	1.47	1.57
9. Productivity during practical classes	1/10	4/10	8.0	8.0	7.53	7.56	1.75	1.38
Cognitive								
10. Satisfaction with debriefing	1/10	2/10	8.0	8.0	7.63	7.71	1.91	1.50
11. Link between scenarios and theory	1/10	1/10	8.0	8.0	7.86	7.74	1.61	1.41
12. Appropriateness to the themes developed in TP classes	1/10	3/10	7.0	8.0	7.37	7.61	1.74	1.52
Realism								
13. Realism of the scenarios developed	1/10	1/10	8.0	8.0	7.28	7.39	1.94	2.08
14. Credibility during the scenario	1/10	1/10	8.0	8.0	7.24	7.41	1.86	1.85
15. Quality of the material used in the practicums	1/10	1/10	8.0	7.0	7.46	7.23	2.01	1.72
16. Quality of the equipment used in the practicums	1/10	1/10	8.0	7.0	7.45	7.20	1.95	1.71
17. Quality of the simulators	1/10	3/10	8.0	7.0	7.59	7.25	1.84	1.45

Note: n = Sample number; Min = Minimum; Max = Maximum; Med = Median; M = Mean; SD = Standard deviation; CP = Clinical practice.

The Mann-Whitney U test examined the differences between each item of the scale (variables) and the variable "course year" (2nd year and 3rd year). Only the variable Interaction with colleagues ($p = 0.039$) and the variable Quality of the simulators ($p = 0.048$) showed statistically significant differences ($p < 0.05$).

When asked about the adaptation to simulation at the simulation center, students reported that they adapted to it ($M = 3.40$; $SD = 1.06$) and assessed their performance as satisfactory ($M = 3.43$; $SD = 1.02$). A dependency relationship was found between the variable "adaptation to simulated practice in simulation centers" and the variable "CP I and CP II" ($p = 0.013$). However, the Mann-Whitney U test ($u = 5171.500$; $p = 0.032$) confirmed, with statistical significance ($p < 0.05$), that its distribution was not the same among the categories of the variable "CP I and CP II." Regarding the variable "performance in the simulation center," a dependency relationship was also observed with the categories of the variable "CP I and CP II" ($p = 0.003$). However, the Mann-Whitney U test ($U = 5255.500$; $p = 0.048$) also confirmed, with statistical significance ($p < 0.05$), that its distribution was not the same among the categories of the variable "CP I and CP II."

Discussion

Simulation represents an opportunity in nursing education. It is an active pedagogical strategy based on interactive and challenging approaches that train future professionals to meet society's growing health demands, particularly the need for safe and quality nursing care (Lucas et al., 2020). The studies on this theme refer that students consider simulation to be a teaching strategy that increases knowledge, skills, patient safety, and confidence levels in care delivery, with an impact on their performance and satisfaction (Costa et al., 2020; Ferreira et al., 2018; Lucas et al., 2020). Student satisfaction has become a widely used indicator to evaluate academic institutions, pedagogical quality, and teachers, contributing to improving teaching quality. Regarding this sample, the comparison of the socio-demographic characteristics, specifically gender, age, and professional

occupation, between students attending CP I and CP II is not statistically significant. Thus, it is not considered a predictor of satisfaction with simulation. Similarly, the variables "course year" and "course contents" covered in CP I (Medical-Surgical Nursing) and CP II (Maternal and Obstetric Nursing and Child Health Nursing and Pediatrics) are not predictors of satisfaction. A study conducted with nursing students at the University of Chile (Lewis & Ciak, 2011) examined the statistical correlation between students' socio-demographic variables and satisfaction. It found no statistically significant differences for the variables "gender" and "course year," which corroborates the results of the present study. Also, the present study's total mean of global satisfaction with the simulation, obtained by administering the ESECS, was 7.501 on a scale of 1 to 10. This result aligns with several studies conducted in different countries that found high levels of student satisfaction with simulation (Basak et al., 2016; Costa et al., 2020; Franzon et al., 2020; La Cerra et al., 2019; Moura & Caliri, 2013; Sarman & Pardi, 2019). Students consider simulation a positive learning strategy (Mills et al., 2014) that increases knowledge (Costa et al., 2020; Ferreira et al., 2018) and contributes to self-reliance (Araya et al., 2017; Franzon et al., 2020; Lewis & Ciak, 2011). Furthermore, it helps train professionals capable of making autonomous, safe, evidence-based decisions supported by clinical reasoning (Bortolato-Major et al., 2020). These professionals can also delegate, prioritize, manage their professional practice, and collaborate with other professionals (Souza et al., 2020). A randomized controlled clinical trial with Brazilian nursing students (Costa et al., 2020) and another quasi-experimental study with Portuguese students (Baptista et al., 2014a) have concluded that students learning through simulation have higher levels of self-confidence and satisfaction with learning in most variables of both these subscales than those learning through traditional methods. Assessing the satisfaction of this sample using the ESECS dimensions (Practical, Cognitive, and Realism) allows observing that, on average, students are more satisfied with the Cognitive dimension, which aligns with the study of Baptista et al. (2014b), and less satisfied with the Realism dimension, which does not corroborate Baptista et al.'s (2014b) results, as these show that students were less satisfied with the Practical dimension. The mean score of the Cognitive dimension indicates that most students reflect on their actions due to simulation, linking theory to practice. Thus, several studies have found higher student satisfaction with this dimension (Bortolato-Major et al., 2020; Souza et al., 2020), similar to what is demonstrated in the present study. The Practical dimension relates to the student's satisfaction with the simulations and the dynamism of the classes, which favors students' teaching-learning process (Bortolato-Major et al., 2020). Assessing the mean value assigned to each item of the different dimensions allows concluding that in the Practical dimension, in both CPs, the item with the highest score was *Learning achieved.* This shows that students understand simulation-based teaching as important for their learning and skill acquisition process before going to clinical teachings in

real-life settings, which aligns with the findings of other studies (Costa et al., 2020; Ferreira et al., 2018; Mills et al., 2014). In a study conducted in Chile, whose sample consisted of 4th- and 5th- year undergraduate nursing students, the item was also one of those that obtained the highest satisfaction from students (Vera & Martini, 2020).The Realism dimension translates the scenario's ability to represent reality with legitimacy and fidelity, as well as the quality of the materials, equipment, and simulators used (Bortolato-Major et al., 2020). Although with a high mean score, the students in the present study's sample are less satisfied with the Realism dimension. This leads to reflecting on the need to improve the aspects of this dimension to increase students' satisfaction levels. In this dimension, the item with the highest mean score for CP I (2nd year) students is the *Quality of the simulators,* and for CP II (3rd year) students is *Credibility during the scenario.* The item *Link between scenarios and theory* scored the highest in the Cognitive dimension in both CPs. This confirms the results of a study conducted with Brazilian nursing students, where this item also obtained the highest level of satisfaction. Thus, simulation improves the association between theory and practice, facilitating the transition from student to professional (Souza et al., 2020). However, in some studies where the ESECS was used (Franzon et al., 2020; Meska et al., 2018; Oh et al., 2015), students showed a higher level of satisfaction with the Realism dimension, followed by the Cognitive dimension, and finally by the Practical dimension. Still, the difference between the means of the three dimensions is minimal, not reaching half a percentage point. This is also observed in the results of the present study. Regarding the adaptation to simulation, students report that they adapted and assess their performance as satisfactory. There are statistically significant differences ($p < 0.05$) in the relationship between the variable "adaptation to simulated practice in simulation centers "and the variable "CP I and CP II" ($p = 0.013$), and also the variable "performance in the simulation center" and the variable "CP I and CP II" ($p = 0.003$).

The complexity of the situations presented for resolution in the simulation is consistent with clinical practice, preparing the student for future situations. Thus, the student is expected to develop greater confidence, satisfaction, and competence to assess and intervene in the presented clinical situations, proving to be prepared for real-life clinical practice. Studies using simulated clinical scenarios with increasing levels of complexity have observed a rise in students' self-confidence in nursing assessment and intervention. Based on this self-confidence, students feel more competent and satisfied with intervening in practice (Bortolato-Major et al., 2020). Evidence has shown that simulation develops all the learning dimensions of nursing: *savoir* (knowledge), *savoir-faire* (skill, knowing how to act), *vouloir agir* (wanting to act), *pouvoir agir* (being able to act), and *savoir agir* (knowing how to act; Moura & Caliri, 2013). These are translated into students' positive self-image, self-knowledge, and combination of knowledge and skills through concrete and safe attitudes. Even in students who fear evaluation,

simulation promotes the acquisition of practical skills and diagnostic reasoning in a non-threatening, interactive and self-sufficient environment (Moura & Caliri, 2013). Satisfied and motivated students learn more and better. Thus, students' high satisfaction with simulation should encourage nursing education institutions to include this methodology in their academic curricula. The present study's results reinforce the scientific evidence of undergraduate nursing students' satisfaction with simulated clinical experiences. They also contribute to research and practice as they identify the indicators that require more planning and improvement to increase students' satisfaction with simulation and, consequently, with the teaching-learning process.

The present study has limitations, such as: the use of only medium-fidelity simulators in the course units CP I and CP II; the COVID-19 pandemic crisis experienced during the study; the sample's size, which makes it impossible to generalize the results; and the school's teachers' involvement in the study, which may bias the results. Further studies are recommended with larger samples, high-fidelity simulators, and different scenarios covering care delivery in different areas of intervention. Nevertheless, the accuracy of the present study's methods and processes ensures the results' robustness and usefulness.

Conclusion

Simulation is a constructive process that enables a new pedagogical approach based on interaction and challenge. It develops students' essential skills in different areas for more adequate and safe practical responses. The results show that undergraduate nursing students are satisfied with simulation. The Cognitive dimension has the higher means, followed by the Practical dimension, and finally, the Realism dimension. Thus, the results indicate the link between the scenarios and theory and reveal that simulation allows students to get involved, demonstrate commitment, and combine theory with practice, reflecting on their actions. The characteristics of the simulators allow approximating the presented scenarios to real-life settings through their physiological-like response to students' actions. This may have influenced the results of the Realism dimension in the present study. Students state they adapted well to the simulated clinical experiences and are satisfied with their performance. They understand this teaching strategy as necessary for their learning and skill acquisition regarding interpersonal relationships, coordination, clinical reasoning, and problem-solving, contributing to their training and better response during clinical teachings in real-life settings.

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