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Research

The effects of high-fidelity simulation training on emotional intelligence in undergraduate nursing students: A prepost intervention study

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ABSTRACT

Background: Nurses form and maintain relationships within emotionally charged environments. Consequently, nursing practice requires adequate management of emotions.
Aim: To evaluate the impact of high-fidelity simulation training on nursing students' emotional intelligence (EI).
Methods: About 202 first-year students participated in a quasi-experimental study using a longitudinal design with a single group pre- and postintervention evaluation. Their EI levels were compared at baseline and after the simulation experience using the Trait Meta-Mood Scale – 24 (TMMS-24). A structured debriefing phase was specifically designed to analyze and reflect on nursing students' emotions, those of the patient, and their partner during the five simulated scenarios.
Results: Nursing students significantly improved their EI levels after the simulation sessions. The effect size was medium for the total score of the TMMS-24 and the "emotional clarity" dimension, whereas this effect was small for the "emotional attention" and "emotional repair" dimensions.
Conclusions: High-fidelity simulation training allows nursing students to improve their EI levels when they have opportunities to interact with simulated patients and participate in a structured debriefing phase aimed at reflecting on emotions.

Introduction

Nursing is one of the most stressful professions and nursing professionals suffer from a high rate of burnout (Chen and Meier, 2021). Factors that create stress in nurses include shift work, workload, lack of psychological support, individual conflicts, and emotions and feelings expressed by patients and their families (Aloisio et al., 2021). Consequently, nurses form and maintain relationships within emotionally charged environments, so emotions are essential for nursing practice (Rodríguez-Leal et al., 2023), and, therefore, knowing how to manage them is critical for holistic patient care (Foster et al., 2015). In this sense, nursing practice requires interpersonal relationships with patients, other nurses, and healthcare professionals, and, therefore, effective communication skills and emotional intelligence (EI) are necessary to provide quality nursing care (Kerr et al., 2020). Throughout the health/illness process, nursing professionals must understand and manage the feelings of both themselves and others in order to effectively address the emotional needs of the patient and their family (Foster et al., 2015). When nurses understand, identify, and manage their own and patients' emotions, nursing care and patient satisfaction are improved (Nightingale et al., 2018). Consequently, nurses with developed EI skills offer more appropriate individualized care, as they show greater sensitivity not only to the physiological needs of the people they help but also to their own emotional needs (Kaya et al., 2017). Therefore, nursing practice requires adequate management of emotions (Dugué et al., 2021).

EI is a psychological construct developed to describe and evaluate the abilities to know and manage one's and other's emotions (Kerr et al., 2020). From the ability-based model of EI proposed by Mayer

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and Salovey (1997), EI is defined as "the ability to a) perceive emotion; b) use emotion to facilitate thought; c) understand emotions; and d) manage emotion", suggesting EI depends on the ability of process emotional information and use of basic abilities related to emotions. Consequently, these authors proposed the four-branch model of EI, proposing EI as a combination of four abilities related to emotions: a) emotional perception and expression; b) use of emotions; c) emotional understanding; and d) emotional management (Mayer and Salovey, 1997). As EI is considered an ability, this model implies EI can be learned.

EI in nursing students has been widely studied. Foster et al. (2015) identified in their review a variety of strategies to improve EI skills in nursing students, but without integrating them into the curricular subjects; consequently, they recommended integrating EI training into the nursing degree. In another review, Lewis et al. (2017a) found a relationship between EI and the affective events experienced by nursing students. In addition, Cleary et al. (2018) identified in their review a positive link between EI and resilience in nursing students. On the other hand, the review conducted by Singh et al. (2020) concluded the academic performance of health sciences students, including nursing students, was related to higher levels of EI. Finally, Dugué et al. (2021) concluded in their review EI has benefits for nursing students, indicating that there are training programs aimed at its development that have proven to be effective in nursing education. Therefore, most of the reviews conducted to date conclude EI should be present in nursing curricula, so nursing teaching programs should include emotional knowledge and skills related to EI (Foster et al., 2015); Dugué et al. 2021). However, Hamad and Gurbutt (2023) indicated in their review there is a need for greater inconsistency in the EI constructs, components, and teaching strategies used in preregistration nurse education.

Despite the importance of the education and training of nursing students in EI and its inclusion within the nursing degree curricula, educational interventions based on the clinical simulation methodology for its development are scarce to date. The few simulated experiences in nursing students have been demonstrated to improve their EI levels in simulated scenarios based on palliative care (Alconero-Camarero et al., 2018), cultural awareness (Glenn and Claman, 2020), maternal care (Kim and Lee, 2021), home care (Ruiz-Fernández et al., 2022), and end-of-life care (Yoong et al., 2023). However, none of these previous studies applied high-fidelity structured simulation training, conducted a debriefing phase specifically designed to analyze and reflect on nursing students' emotions, and used standardized patients as actors. Furthermore, nursing students seem not to be prepared for adequate management of their own emotions, as they experience high stress and negative emotions related to clinical training (Dugué and Dosseville, 2018; Gurková and Zeleníková, 2018). Consequently, since nursing practice requires adequate management of emotions, undergraduate nursing students should be trained in adequate management of their own emotions to ensure high-quality care in their future clinical practice.

Therefore, this study aimed to evaluate the impact of high-fidelity simulation training on undergraduate nursing students' EI, conducting a debriefing phase specifically designed to analyze their emotions and including standardized patients. In this sense, our main hypothesis was that this training increases EI in these nursing students.

Methods

Study Design

We conducted a quasi-experimental study using a longitudinal design with a single group pre- and postintervention evaluation. EI was evaluated using high-fidelity simulation-based training, comparing the levels obtained in these values at baseline (pretest) and after the simulation experience (post-test). The research and reporting methodology followed the TREND criteria for quasi-experimental study designs (Des Jarlais et al., 2004).

Sample and Setting

The participants were first-year nursing students from a Spanish university. About 234 students participated in high-fidelity simulation sessions within the subject "Fundamentals of Nursing". The study was conducted between September 2023 and May 2024.

The sample size was calculated using the G*Power 3.1.9.6 program, considering an effect size of 0.402 for the EI total score. This value was obtained in a previous study that used a single-group pre- and postintervention evaluation to analyze the impact of an end-of-life care simulation program on nursing students' EI (Yoong et al., 2023). Applying a difference between two dependent means (matched pairs) and a two-tailed test, an estimated effect size of 0.402, a significance level of 0.05, and a power of 0.95, at least 83 nursing students were necessary. Assuming a 20% attrition rate (Arrogante, 2022), we aimed to recruit a minimum of 100 students.

High-Fidelity Simulation Sessions

The simulated scenarios recreated emotionally charged situations in a hospital room, where students should manage a patient's emotions and feelings every time they entered the patient's room. A 45-year-old patient diagnosed with complicated vertebral disc prolapse has been recently admitted to the neurosurgery unit after a spinal fusion surgery between L5 and S3. A fentanyl PCA (patient-controlled analgesia) pump is connected through an intrathecal catheter to control postsurgical pain. He works as a warehouse worker in a multinational enterprise and lives with his 85-year-old mother. He has no significant family medical history and no known drug allergies. The simulated emotionally charged situations were as follows:

- Situation 1: The patient is on the phone, upset and anxious. His mother has suffered a stroke and has just been admitted to the intensive care unit of the same hospital. He must stay in bed at least 24 hours after the surgery. He wants to visit her in any way possible.
- Situation 2: The patient is worried about losing his work as a warehouse worker. His mother is economically dependent on him, as her widow's pension covers the rent house. He collapses during the simulation and asks students for advice.
- Situation 3: The patient is nervous about the possible consequences of his mother's stroke and whether he will be able to care for her adequately. He does not have enough income to pay for a formal caregiver or institutionalize her in a residence. He breaks down during the simulation and asks students for advice.
- Situation 4: The patient is anxious about whether his spinal fusion has been successful and whether he will be able to walk again and return to normal life. He is very nervous, collapses during the simulation, and asks students for advice.
- Situation 5: The patient is tied with mechanical restraints per medical prescription. He is agitated but not aggressive. He begs students to give him a chance and untie him, promising them he will behave.

It should be noted that all these simulated scenarios were designed and previously tested by the professors of the subject, who were experts in clinical simulation methodology. In addition, all scenarios had been adequately performed in previous academic years.

An actor or standardized patient performed the role of this patient who was trained and selected to guarantee a standardized process and high-fidelity experience (Lewis et al., 2017b). The Healthcare

Simulation Standards of Best Practice™: Simulation Design proposed by the International Nursing Association for Clinical Simulation and Learning (a) (INACSL Standards Committee et al., 2021a) were followed in all simulation sessions.

The nursing students formed couples and received a brief description of the simulated situation to train and prepare the emotional skills needed to resolve each simulated scenario. Before the simulated experience, theoretical knowledge related to EI and communication skills (theoretical classes, multimedia presentations, and videos) was provided to all students during the "Fundamentals of Nursing" subject. Each couple of students performed a simulated scenario, while the remaining students were observing in another room. It should be noted that all students had had previous simulated experiences since clinical simulation methodology is integrated into other subjects during the first year of the Nursing Degree. Before each simulated scenario, a prebriefing phase was conducted to establish a safe psychological learning environment, following the current recommendations and standards defined by the literature (Rudolph et al., 2014; Turner and Harder, 2018; INACSL Standards Committee et al., 2021a). Accordingly, students' readiness was assessed and ensured before the simulated experience. Each simulated scenario lasted 10 minutes; subsequently, the professor of the subject was the facilitator during the debriefing phase, which lasted 20 minutes. In this phase, the nursing students were asked to analyze and reflect on their emotions, those of the patient, and those of their partner during the simulation experience. Table 1 shows the debriefing question guide based on the four-branch model of EI (Mayer and Salovey, 1997), specifying the questions asked in each branch according to this model.

Table 1
Debriefing question guide based on the four-branch model of emotional intelligence (Mayer and Salovey, 1997).

Branch of emotional intelligence	Questions
Emotional perception and expression	• What were you feeling during the simulated scenario? • What do you think the patient and your partner in the simulated scenario were feeling?
Use of emotions	• How did your feelings guide you to what is important to think about during the simulation experience? • How did you use your feelings to help you with decisions that were appropriate for you and others involved?
Emotional understanding	• What was the purpose of the emotion you felt during the simulation experience? • What was the purpose of the emotion expressed by others in the simulated scenario? • What was the relationship between emotions? How and why did they change from one to another? • How did emotions lead to the behavior in yourself and others? • What was the relationship between thoughts and feelings? • What were the causes of your emotion and what is the relationship to your human psychological needs, especially your unmet emotional needs?
Emotional management	• How were you able to turn negative emotions into positive learning and growing opportunities? • How were you able to help others identify and benefit from their emotions?

Data Collection

The "Trait Meta-Mood Scale – 24" (TMMS-24) (Salovey et al., 1995) was used to evaluate nursing students' EI. This scale assesses EI from the ability-based model proposed by Mayer and Salovey (1997), considering EI as an ability that can be learned and depends on individual experiences, such as after high-fidelity simulation training. In this sense, this scale evaluates the metacognition of our emotional states, that is, our own knowledge about our own emotional capacities, including the skills necessary to be aware of our emotions and our ability to regulate them (Salovey et al., 1995). The TMMS-24 consists of 24 items, answered using a 5-point Likert response scale (from 1 = "strongly disagree" to 5 = "strongly agree"). These items are divided into three dimensions (8 items per dimension): 'emotional attention', the ability to feel and express one's feelings appropriately; "emotional clarity", the ability to understand and discriminate feelings; and "emotional repair", the ability to regulate moods correctly, repair negative states, and prolong positive ones. The TMMS-24's total score ranges from 24 to 120 points. Higher scores reflect higher EI levels. The Spanish version of TMMS-24 was validated and adapted by Fernández-Berrocal et al. (2004) obtaining a global internal consistency quite similar to the original version (Cronbach's alpha coefficient = 0.95), and adequate internal consistencies for emotional attention, emotional clarity, and emotional repair dimensions (Cronbach's alpha coefficients = 0.90, 0.90, and 0.85, respectively).

Data Analysis

STATA version 15.0 statistical software for Windows (StataCorp. LLC, College Station, TX, USA) was used to analyze study data. Descriptive statistics (frequencies, percentages, means, and standard deviations) for demographic data, each dimension, and the total score of TMMS-24 were calculated. All statistical data were blinded to the professor of the subject. Our null hypothesis proposed was the inexistence of a change in undergraduate nursing students' EI after high-fidelity simulation training. Conversely, our alternative hypothesis was that this training increases EI in these nursing students. We confirmed that the data follows a normal distribution using the Kolmogorov–Smirnov test. Previously, we evaluated the possible influence of participants' demographic characteristics on their EI levels. The Student's t-test and Pearson's correlation coefficients (r) were obtained to analyze sex and age differences respectively. Subsequently, the paired samples Student's t-test was used to analyze the differences at baseline (pretest) and after the high-fidelity simulation training (post-test). All statistical tests were two-sided ($\alpha = 0.05$) and, consequently, the statistical significance was set at 0.05. Finally, Cohen's d was calculated to estimate the difference in TMMS-24's mean scores, considering these cut-off points: >1.3 (very large), 0.5-0.8 (medium), 0.2-0.5 (small), and <0.2 (insignificant) (Cohen et al., 2011).

Ethical considerations

The corresponding University Research Ethics Committee approved the study (reference code: CE_20231116_18_SAL). Although the simulation sessions were carried out as a required class activity, all first-year nursing students voluntarily completed the pre- and post-scale. All nursing students were informed about the study before participating, and those who accepted to participate voluntarily, signed a written consent form. This study was conducted according to the principles and ethical guidelines for medical research of the International Declaration of Helsinki (World Medical Association, 2013).

Results

About 234 first-year nursing students took part in the scheduled high-fidelity simulation sessions. Most of them, 202 students, consented to voluntarily participate in the study (86.32% response rate). Based on the calculated sample size, we recruited more than twice the number of nursing students required. Most participants were women (n = 170; 84.2%) and their ages ranged from 18 to 52 years old (mean = 19.99; SD = 4.353).

The analyses to determine possible differences based on participants' characteristics showed that no demographic characteristic, neither sex nor age, had main effects on the TMMS-24. Both the applied Student t-test and the obtained Pearson's correlation coefficient (r) respectively were not statistically significant.

Descriptive statistics of the total score obtained in the TMMS-24 and its three dimensions at baseline (pretest) and after high-fidelity simulation training (post-test) are shown in Table 1. This table also shows the paired samples Student's t-test and effect sizes (Cohen's d) based on the difference in the mean scores of this scale.

The obtained paired samples Student's t coefficients showed statistically significant differences in all dimensions of TMMS-24 and its total score. The effect size of these differences was medium for the "emotional clarity" and the total score of TMMS-24, whereas the obtained effect size was small for the "emotional attention" and "emotional repair" dimensions. Table 2

Figure 1 graphically shows the magnitude of the statistically significant differences in the three dimensions of TMMS-24 and its total score at baseline (pretest) and after high-fidelity simulation training (post-test).

Discussion

Our research assessed the efficacy of high-fidelity simulation training in EI in undergraduate nursing students. Our results show the positive effects of this training on improving this ability in our students. Specifically, they improved their levels in the total score of EI, including the three dimensions of TMMS-24, "emotional attention", "emotional clarity", and "emotional repair". Therefore, our findings support our alternative hypothesis, as the high-fidelity simulation training had a positive impact on undergraduate nursing students, increasing their EI levels after its implementation.

In addition, we obtained larger effect sizes than previous studies that conducted quasi-experimental designs using a single-group pre-post intervention study. In this sense, Ruiz-Fernández et al. (2022) analyzed the improvement of nursing students' EI through clinical simulation during home visits, obtaining smaller effect sizes for each EI dimension, ranging from .111 for the 'emotional attention' dimension to 0.330 for the "emotional clarity" dimension. Furthermore, Yoong et al. (2023) conducted another quasi-experimental study to evaluate the impact of a palliative and end-of-life care simulation program on nursing students' EI. They obtained smaller effect sizes ranging from 0.249 for the "emotional repair" dimension to 0.402 for the EI total score.

Although previous studies have demonstrated the effectiveness of simulation-based training in nursing students' EI, there is a lack of studies that use structured high-fidelity simulation programs and specifically analyze students' EI in the debriefing phase. In this sense, the few simulated experiences have performed both low-fidelity (Glenn and Claman, 2020; Kim and Lee, 2021) and high-fidelity simulations (Alconero-Camarero et al., 2018; Ruiz-Fernández et al., 2022; Yoong et al., 2023), including standardized patients in some of them, but they did not include a debriefing phase specifically designed to analyze EI. Our high-fidelity simulation training in undergraduate nursing students comprised five emotionally charged situations in a hospital room, where students had to manage a patient's emotions and feelings every time they entered the patient's room. We included an actor in our simulated scenarios who performed the patient's role. In addition, we conducted a structured debriefing phase specifically designed for nursing students to analyze and reflect on their emotions, those of the patient, and those of their partner during the simulation experience. For that purpose, we elaborated a debriefing question guide based on the four-branch model of EI (Mayer and Salovey, 1997), specifying the questions asked in each branch according to this model. In this sense, the debriefing phase is defined by the INACSL as a "reflective process immediately following the simulation-based experience" where "participants reflective thinking is encouraged" and "participants explore their emotions and question, reflect, and provide feedback to one another", and whose purpose is "to move toward assimilation and accommodation to transfer learning to future situations" (p.59) (INACSL Standard Committee et al., 2021b). This reflective process has been widely demonstrated to impact positively on nursing students' learning process (Lee et al., 2020). Consequently, including a debriefing phase specifically designed to encourage nursing students' reflective thinking on emotional management could transfer their learning to future clinical practice. In addition, we applied the TMMS-24 before and after the simulation experience, a scale specifically designed to evaluate EI according to this ability-based model of EI (Salovey et al., 1995). Therefore, our results demonstrate that the development of EI improves when nursing students have opportunities to interact with simulated patients and participate in a debriefing phase, which elicits their reflection and internalization about the emotional perception,

Table 2
Descriptive statistics of the scores obtained for the Trait Meta-Mood Scale – 24 (TMMS-24) at baseline (pretest) and after high-fidelity simulation training (post-test), paired samples Student's t-test, and effect sizes (N = 202).

	Measures						Pairs postpre				
	Post		Pre						95% CI[g]		
	M[a]	SD[b]	M[a]	SD[b]	t[c]	p[d]	MD[e]	SE[f]	Lower	Upper	Cohen's d
Emotional attention	29.06	5.96	27.37	5.86	5.01	<0.001	1.69	4.81	1.03	2.36	0.352
Emotional clarity	27.71	6.45	25.08	5.83	6.74	<0.001	2.63	4.92	1.45	2.81	0.511
Emotional repair	28.86	6.47	27.29	6.17	5.15	<0.001	1.60	4.34	0.97	2.17	0.363
Total score	85.64	16.20	80.05	13.80	7.05	<0.001	5.59	10.86	3.88	6.90	0.523

[a] M: Mean score.
[b] SD: Standard deviation.
[c] t: T-test.
[d] p: p-value.
[e] MD: Mean difference.
[f] SE: Standard error difference.
[g] CI: Confidence interval.

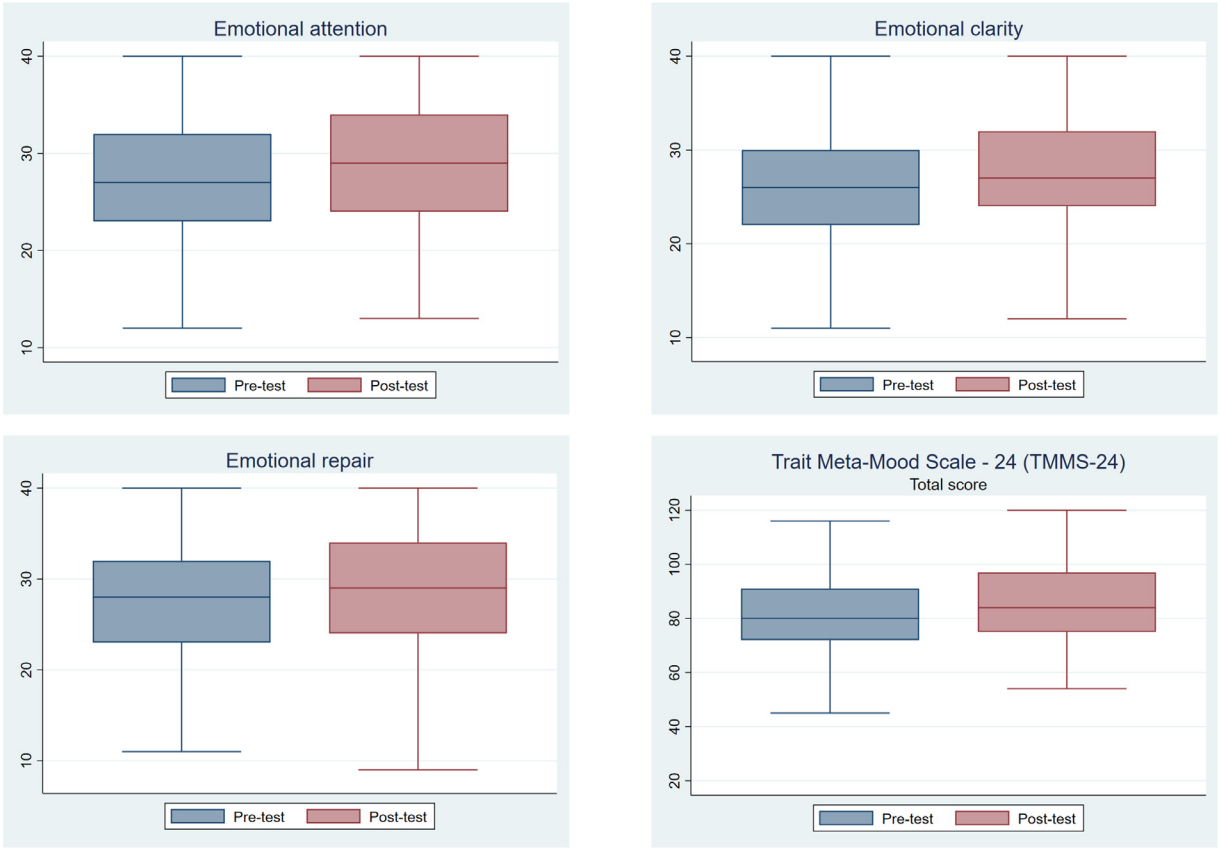

Fig. 1. Statistically significant differences in the three dimensions and total score of the Trait Meta-Mood Scale-24 (TMMS-24) at baseline (pretest) and after high-fidelity simulation training (post-test) (N = 202).

expression, use, understanding, and management of their own emotions, those of the patient, and those of their partner during the simulation experience.

On the other hand, classroom teaching methods and programs for developing and improving nursing students' EI have been mainly focused on lectures, case studies, workshops, group discussions, role plays, and online methods (Foster et al, 2015; Dugué et al., 2021; Hamad and Gubbut, 2023). On the contrary, simulation-based learning has been scarcely used in EI education for nursing students. However, the positive impact of clinical simulation methodology on nursing education has been widely studied and demonstrated to be an effective teaching strategy to improve clinical nursing reasoning (Theobald et al., 2021) learning outcomes in nursing education (Lee et al., 2020) and the acquisition of nursing competencies (O'Rourke et al., 2023; Shin et al., 2015). This methodology has not only been shown to develop the development of nursing technical skills (Shin et al., 2015) but also nontechnical skills needed in nursing clinical practice, such as communication (Kerr et al., 2020) teamwork (Campbell et al., 2020), empathy (Chua et al., 2021), and interprofessional work (Marion-Martins and Pinho, 2020). Since EI constitutes an essential nontechnical skill for nurses, nurse educators may implement new teaching methodologies, such as simulation-based education, to help nursing students develop their EI level and manage their own emotions.

Furthermore, there is a great range of EI constructs, components, and teaching strategies used in undergraduate nurse education (Hamad and Gubbut, 2023). Consequently, a consensus is needed to standardize EI education in nursing study plans. However, Foster et al. (2015) recommended in their integrative review to implement the ability-based model of EI (Mayer and Salovey, 1997) for integrating EI training in nursing education curricula. Our high-fidelity simulation training was based on this model, including a debriefing phase specifically designed to evaluate each branch of EI included in this model. It should be noted that the main advantage of Mayer and Salovey's EI model for nursing students is that it considers EI an ability that can be learned through individual experiences. Therefore, we believe an active and experiential learning method, such as clinical simulation methodology following this ability-based model of EI, could represent a solution for nursing educators concerned about finding the best teaching strategy when teaching EI. However, high-fidelity simulation training aimed at enhancing EI levels may be integrated not only into nursing curricula at all levels of nursing education but also into all professional settings for registered nurses.

The results of our research show that the inclusion of high-fidelity simulation training, conducting a debriefing phase specifically designed to analyze emotions, and including standardized patients, is highly recommended to improve EI levels, ideally from the first year of the nursing degree. As nursing practice requires adequate management of emotions (Dugué et al., 2021), improving EI levels in nursing students could ensure high-quality care in their future clinical practice. In this sense, EI also influences the stressors inherent to clinical practices (Rodríguez-Leal et al., 2023), so the positive impact of high-fidelity simulation training could be confirmed before nursing students join their professional practice. In addition, EI education has significant implications for registered nurses' workplace performance, well-being and job stress, emotional welfare, workplace bullying, and nursing retention (Foster et al., 2015). Consequently, nurse educators should implement new teaching methodologies to help nursing students develop their EI levels and adequately manage emotions, including simulation-based learning. Considering our findings, it is needed to include simulation training programs in nursing study

plans to improve EI levels, preparing them to deal with their emotions and those of patients for their future clinical practice and ensuring high-quality care.

Limitations

Using a self-report scale is a limitation of our study, as self-report data are associated with specific biases. In this sense, this scale has shown high internal validity and has been validated and translated into various languages, and applied in different international studies. However, the positive impact of our high-fidelity simulation training is based on short-term effects and, consequently, it would be advisable to assess this impact in the long term, evaluating first-year nursing students during the next years of nursing degree. In addition, we conducted a single-center study. Consequently, future research conducting multicenter studies is needed to confirm the positive effects of high-fidelity simulation training, including standardized patients and a specifically designed debriefing phase for increasing EI levels in undergraduate nursing students. These studies should conduct quasi-experimental or experimental designs with a control group and assess the impact of this training during follow-up periods. Furthermore, future research should evaluate the development of positive nursing professional values using this high-fidelity simulation training in registered nurses, and not only in undergraduate nursing students, applying it in other healthcare and educational settings.

Conclusion

Our high-fidelity simulation training conducting a debriefing phase specifically designed to analyze emotions and including standardized patients allows undergraduate nursing students to improve their EI levels. Before managing emotionally charged situations with real patients, colleagues, or other healthcare professionals in real clinical practice, the improvement of these levels is fostered when nursing students have opportunities to interact with simulated patients and participate in a structured debriefing phase, which elicits their reflection and internalization about the emotional perception, expression, use, understanding, and management of their own emotions, those of the patient, and those of their partner during the simulation experience. Therefore, the inclusion of simulation training programs in nursing study plans to foster EI levels is needed to train undergraduate nursing students, preparing them to deal with their emotions and those of patients for their future clinical practice, and ensuring high-quality care. Our findings should be confirmed by future research, conducting quasi-experimental or experimental studies with a control group and follow-up periods, recollecting registered nurses, and expanding this high-fidelity simulation training to other healthcare and educational settings.

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CRediT authorship contribution statement

Oscar Arrogante: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Ismael Ortuño-Soriano:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Ana Sofia Fernandes-Ribeiro:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Marta Raurell-Torredà:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Diana Jiménez-Rodríguez:** Writing – review & editing, Writing – original draft, Visualization, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Ignacio Zaragoza-García:** Writing – review & editing, Writing – original draft, Visualization, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

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