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Review

Pedagogical strategies to improve emotional competencies in nursing students: A systematic review

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ABSTRACT

Objectives: To reveal the effectiveness of didactic architectures and pedagogical strategies to be implemented in nursing curricula to develop and improve Emotional Competencies (EC) in undergraduate nursing students.
Design: Systematic review of effectiveness conducted according to Joanna Briggs Institute (JBI) guidelines. We followed the PRISMA statement to guarantee the transparency of the review and the GRADE to report the strength of evidence.
Data sources: Seven databases were searched: MEDLINE, The Cochrane Library, SCOPUS, CINAHL, EMBASE, PsycINFO and ERIC. Grey literature was also searched through the OpenGrey database.
Review methods: Studies focusing on educational programmes and/or activities to develop EC in nursing curricula, published in English or Italian were included. Quality assessment of the studies was evaluated using JBI critical evaluation tools and the Mixed Methods Appraisal Tool (MAAT). Following JBI guidelines, a narrative synthesis was performed.
Results: A total of 19 studies from 8 countries were included. The population varied from first to fourth-year students in relation to the duration of the undergraduate nursing program across the various countries. Most of the students were females. The age of the participants ranged between18 and 56 years. The most common pedagogical strategies were simulation, role playing, and face-to-face lessons. In some cases, studies combined two or three pedagogical strategies in the same intervention. The most effective strategy was simulation, which improved EC, compassion, self-awareness, self-efficacy, empathy, critical thinking, clinical practice skills, and teamwork skills. Furthermore, the combination of lessons, simulation, and literature exploration effectively developed communication skills, and improved students' satisfaction.
Conclusions: Investing in simulation, role-playing activities, and lessons regarding the importance of EI, empathy and compassion, and the role of an emotionally competent nurse leads to improved nursing care and wellbeing.

1. Introduction

Emotional Intelligence (EI) is defined as the ability to understand and manage our emotions and those of others (Goleman, 1995) and to respond by adapting to the situation (Parsa-Yekta and Abdolrahimi, 2015). EI is characterized by five elements or concepts: self-awareness, self-management, social awareness, social management, empathy (Alsufyani et al., 2020; Goleman, 1995, 2012). Self-awareness is defined as an individual's ability to know one's emotions in depth (Alsufyani et al., 2020; Beauvais et al., 2011; Görgens-Ekermans and Brand, 2012); so one can self-manage these emotions in the best possible way to achieve a well-defined purpose (Alsufyani et al., 2020; Beauvais et al., 2011; Parsa-Yekta and Abdolrahimi, 2015). Similarly, social awareness is identified as the ability to clearly understand the feelings of others (Alsufyani et al., 2020; Görgens-Ekermans and Brand, 2012; Raghubir, 2018), and social-management enables relationships built on mutual

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trust (Benson et al., 2010; Raghubir, 2018). Self-management and self-awareness are essential concepts in nursing to maintain high levels of well-being in work and care settings (Alsufyani et al., 2020; Nel et al., 2013). Moreover, the concept of empathy is closely related to EI and is defined as the ability to understand and perceive the emotions, thoughts and perspectives of others (Goleman, 1995; Mayer et al., 2008; Raghubir, 2018).

An emotionally competent nurse possesses social adaptation skills enabling more successfully and deeper work (Carvalho et al., 2018). The ability to manage and understand other people's emotions enables nurses to reflect on situations (Raghubir, 2018). Through reflection, a nurse develops more problem-solving and critical thinking skills. By analysing situations, nurses gain a deeper understanding and identify improvements (Giménez-Espert et al., 2020). Therefore, communication skills are improved through the reflection process and the management of one's own and others' emotions (Gou et al., 2020).

Emotional Competencies (EC) could improve nursing care and satisfaction for patients and their carers (Giménez-Espert et al., 2020). Indeed, by managing their own emotions, emotionally competent nurses could adapt their behaviour to the specific situation and improve their relationship with others (Gou et al., 2020). Emotional awareness, emotional management, adaptability to situations, reflection and empowerment of critical thinking skills, enable stress and anxiety reduction (Hong and Lee, 2016) and therefore improve nurses' wellbeing (Afsar et al., 2017). The importance of EI was highlighted during the COVID-19 pandemic, in a study conducted by Soto-Rubio et al. (2020), showing how moderate or high levels of EI protected against burnout in nurses (Soto-Rubio et al., 2020).

Studies of EU in nursing have also focused on undergraduate nursing students. The results of a review conducted in 2017 (Lewis et al., 2017) showed that EI can improve nursing performance and reduce emotional distress during clinical placements. Cleary et al. (2018) suggested that high levels of EI in nursing students is associated with good leadership. Moreover, nursing students who are emotionally competent have more academic success and well-being, but students learn these competencies differently and therefore achieve different levels of EI (Talman et al., 2020). To improve EC in nursing students, it is important to develop and adopt educational programmes to learn how to perceive, understand, and moderate own's own and others' emotions (Lewis et al., 2017). Establishing relationship with others and learning positive strategies, enables improved nursing practice (Watson, 2009). Pedagogical strategies as defined by Calvani (2012) and already adopted in nursing are drawn upon as a touchstone in this study. In Calvani's taxonomy, a hierarchical relationship was formulated between teaching methods defined as pedagogical strategies, and educational macro-structures defined as didactic architectures (Calvani, 2012). The seven didactic architectures in the taxonomy are grouped into 2 groups, based either greater control by the teacher or the student (Pagnucci et al., 2015). There are 14 pedagogical strategies (Calvani, 2012) see Table 1.

1.1. Aim

To reveal the effectiveness of didactic architectures and pedagogical strategies implemented in nursing curricula to develop and improve EC in undergraduate nursing students.

2. Methods

2.1. Registration and reporting guidelines

This systematic review was developed according to the Joanna Briggs Institute (JBI) guidelines for systematic reviews of effectiveness (Aromataris and Munn, 2020; Tufanaru et al., 2020). We registered the review protocol in PROSPERO: registration number CRD42022362308. The PRISMA statement for systematic reviews (Liberati et al., 2009; Moher et al., 2009) was followed to report with transparency the selection process. In addition, the GRADE approach was used to report the strength of evidence, including the summary table (Tufanaru et al., 2020; Schünemann et al., 2013).

Table 1
Calvani's taxonomy: relationship between architecture and pedagogical strategies.

Pedagogical strategies	Didactic architectures	Meta-architectures
Lesson Tutorial approach Modeling Field trip	Receptive (transmissive) Behavioural (directive-interactive)	Meta-architecture teacher focussed (Controlled by teacher)
Problem solving Problem based learning Discussion	Situated guided discovery	Meta-architecture student focussed (Controlled by student)
Simulation Role playing Case studies	Simulative	
Cooperative learning	Collaborative	
Project Brainstorming	Explorative	
Self-regulated learning	Metacognitive	

2.2. Data sources and search strategies

We searched for relevant articles in seven databases: MEDLINE, The Cochrane Library, SCOPUS, CINAHL, EMBASE, PsycINFO and ERIC. Moreover, we also searched the grey literature through the OpenGrey database. Since we did not find similar systematic reviews in literature, no time limits were set. We applied language restrictions to include only studies in English and Italian. We developed the search strategy drawing on the conceptual analyses conducted by Parsa-Yekta and Abdolrahimi (2015), Alsufyani et al. (2020), and Raghubir (2018). A specific search strategy was required for each database (Napolitano et al., 2023). The search terms included the following key concepts: nursing students, pedagogical strategies, emotional intelligence, burnout, intention to leave, and problem-solving skills.

2.3. Inclusion and exclusion criteria

We included studies involving undergraduate nursing students, which reported educational programs that included EI in nursing curricula such as Problem Based Learning, simulation, concept map, case study, Team-Based Learning, and reflective writing. The principal aspects of EI that we considered in the present study were emotionality, sociability, wellbeing, and self-control, and its attributes: self-awareness, self-management, social awareness, and social management. We also included the concept of empathy, which is extremely important for EI. Secondary analysis studies and other reviews were excluded.

2.4. Methodological quality assessment

As reported in the protocol (Napolitano et al., 2023), critical appraisal was conducted independently by four reviewers. Any disagreement on the final critical evaluation was discussed together. To evaluate the studies, we used the JBI critical evaluation tools for cohort studies, case-control studies, case series, case reports, analytical cross-sectional studies, qualitative research, randomized controlled trials, quasi-experimental studies (non-randomized experimental studies), and prevalence studies. Since JBI does not have an evaluation tool for mixed-methods studies, we used the Mixed Methods Appraisal Tool (MAAT) (Hong et al., 2018). The quality assessment scores for each study are reported in Appendix 1.

2.5. Data extraction and data synthesis

Data extraction was designed according to the guidelines provided by the Institute of Medicine (US) Committee on Standards for Systematic Reviews of Comparative Effectiveness Research (IOM, 2011). Data were extracted by four reviewers independently. A narrative synthesis approach was adopted to define the effectiveness of educational strategies used to develop EI in undergraduate nursing students. To develop the narrative synthesis, we reported all the results using the GRADE approach to report the strength of evidence, including a table with a summary of the findings (Tufanaru et al., 2020; Schünemann et al., 2013). To identify the various educational strategies described in the included papers, we based our description on the taxonomy of didactic strategies developed by Calvani (2012) (Table 1).

2.6. Search outcomes

The database search yielded 19.020 papers, from which 692 duplicates were removed. Four researchers were divided in two pairs to screen the titles and abstracts of the remaining 18.328 papers based on the inclusion and exclusion criteria. One pair analysed the titles and abstracts of the first 9.008 papers, and the other pair analysed the rest. In each pair, the researchers screened the titles and abstracts independently. The results from both pairs were then analysed again by the other pair. After this first screening, 37 papers were judged to be eligible for inclusion. Of these, 12 papers were excluded for the following reasons: for 2 papers the full text was not available, another paper was not available either in English or Italian, 6 were ongoing trials or protocols, 1 did not serve the purpose of our review, 1 did not involve our target population, and 1 was excluded for its design.

The 25 remaining studies were assessed for level of evidence, and at the end of this phase another 6 papers were excluded due to insufficient

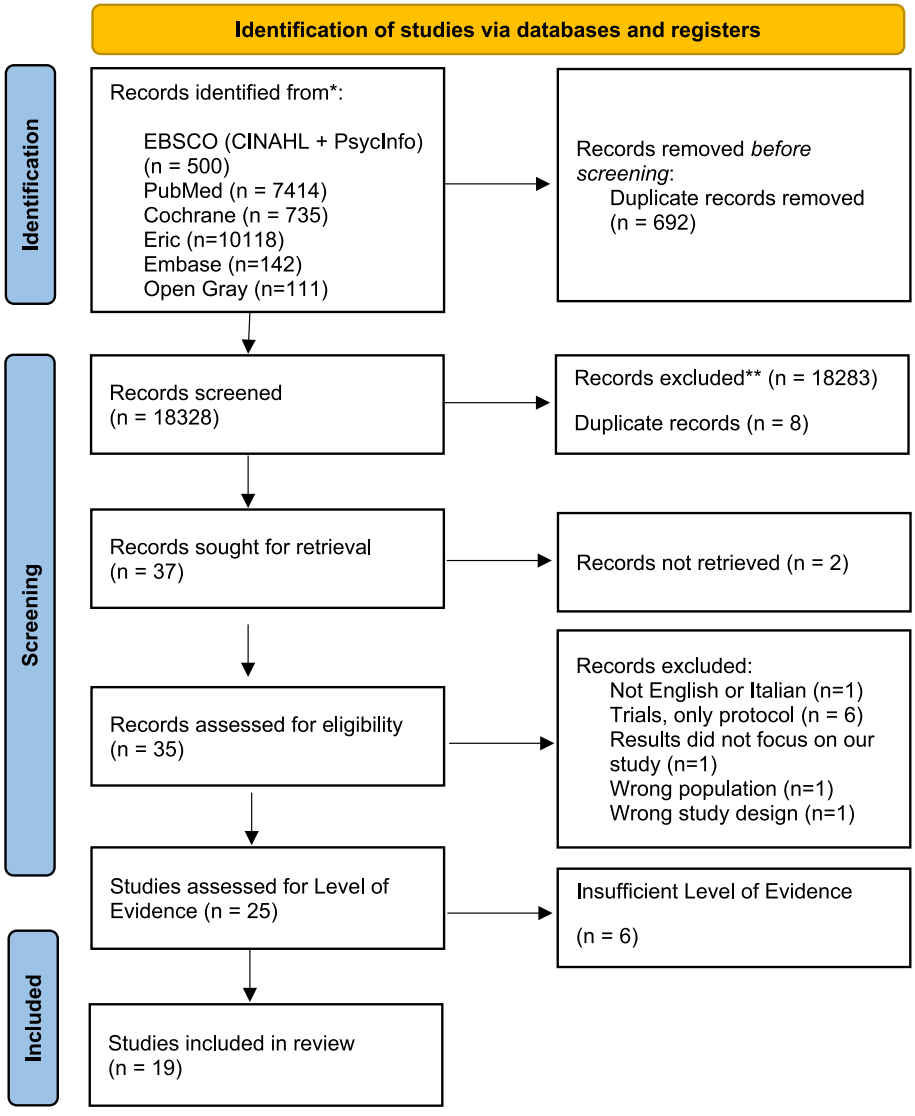

Fig. 1. PRISMA Emotional Intelligence review.
*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).
**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.
From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: https://doi.org/10.1136/bmj.n71.
For more information, visit: http://www.prisma-statement.org/.

level of evidence. (See flowchart in Fig. 1).

3. Results

3.1. Characteristics of included studies

A total of 19 studies were included in this review. Of these, 4 were conducted in Turkey (Table 2), 3 in Spain, 2 in Korea, 1 in UK, 3 in Australia, 3 in Iran, 1 in Taiwan, and 2 in China (Table 2).

Fourteen articles had a quantitative design: 9 quasi-experimental, 4 RCTs, 1 observational, 1 cross-sectional. (Table 2).

Regarding the studies with a qualitative design, 2 had a qualitative descriptive design (Table 2), and 1 had a naturalistic philosophical approach (Dix et al., 2021). Lastly, 1 study had a mixed method design (Bailey and Hewison, 2014), and 2 studies were multicentred (Table 2) and considered students from different universities.

The undergraduate students' year of attendance ranged from the first to the fourth year, in relation to the duration of the course in the various countries. Four studies included first-year students, 5 studies included second-year students, and four studies included only last year students. The students from all years were included in 2 studies. In 4 studies, the students' year attendance was not specified (see Table 2 for more details).

Not all studies reported the gender of participants, but in most studies the majority were females. The age of the participants ranged from 18 to 56 years. The sample sizes varied greatly from 6 (Dix et al., 2021) to 528 students (Hayes et al., 2018).

3.2. Definition of EI in the literature

Across the included studies, EI was defined in different ways. Some studies reported psychological definitions of EI used in nursing theorised by Bar-On, Salovey and Mayer, Goleman, and the Baley theory. In particularly, one study (Erkayiran and Demirkiran, 2018) reported the Bar-On definition of EI. Nine studies (Alconero-Camarero et al., 2018; Batmaz et al., 2022; Lee and Kim, 2022; Goudarzian et al., 2019; Hurley et al., 2020; Kou et al., 2022; Orak et al., 2016; Ruiz-Fernández et al., 2022; Teskereci et al., 2020) reported the Salovey and Mayer definition of EI. Only one study reported the Goleman theory (Choi et al., 2015). One study used the Bailey theory (Bailey and Hewison, 2014). In 2 articles EI was defined by the authors (De Juan Pardo et al., 2021; Dix et al., 2021). Two articles (Hayes et al., 2018; Sisman and Buzlu, 2022) reported only the definition of self-awareness, which is one attribute of EI. Three articles (Larti et al., 2018; Lee et al., 2018; Li et al., 2019), instead, addressed only empathy, which was just one competence developed by EI.

3.3. Didactic architecture and pedagogical strategies to improve EI in nursing students (Table 3)

3.3.1. Simulative

Simulation-based didactic architecture was the most widely used strategy. Six studies used simulation as a pedagogical strategy, 9 used role playing activities, and one used case studies (Hayes et al., 2018).

3.3.2. Receptive

The receptive (transmissive) didactic architecture through face-to-face lessons was also largely used as a pedagogical strategy. Lessons were also used for the control group in the RCT studies.

3.3.3. Explorative

Five studies used the explorative didactic architecture. In particular, the pedagogical strategy used in all of them was the brainstorming. This type of pedagogical strategy was used also in two RCT studies in the control group (Sisman and Buzlu, 2022; Teskereci et al., 2020).

3.3.4. Collaborative

In three studies the authors used the collaborative didactic architecture (Choi et al., 2015; Dix et al., 2021; Hurley et al., 2020), in particular cooperative learning (Dix et al., 2021; Hurley et al., 2020) and group discussion (Choi et al., 2015).

3.3.5. Behavioural

The behavioural (directive-interactive) didactic architecture with a tutorial approach was used as a pedagogical strategy only in one study (Hurley et al., 2020). The metacognitive didactic architecture was used in Lee et al. (2018) where self-regulated learning was reported as a pedagogical strategy. In one study, Teskereci et al. (2020), used a situated guided discovery in the control group as a didactic architecture with discussions and video-discussions.

3.3.6. Combined

In some studies, the authors combined two or three didactic architectures in the same educational programme to teach emotional competencies.

3.4. Outcomes obtained through the educational programs

Students did not develop learning outcomes related to EI only in one study (Alconero-Camarero et al., 2018).

3.4.1. Receptive

In studies where the receptive (transmissive) pedagogical strategy was implemented through face-to-face lessons, students improved their interpersonal skills, self-esteem (Batmaz et al., 2022) and EI score (Batmaz et al., 2022; Goudarzian et al., 2019).

3.4.2. Simulative

Studies where simulation was employed as a pedagogical strategy, showed an improvement in students' EI (Dix et al., 2021; Ruiz-Fernández et al., 2022), critical thinking (Dix et al., 2021), self-awareness (Hayes et al., 2018) self-efficacy (Ruiz-Fernández et al., 2022), empathy (Hayes et al., 2018; Larti et al., 2018), ability to formulate management strategies (Hayes et al., 2018), and compassion (Hayes et al., 2018; Larti et al., 2018).

3.4.3. Explorative

Students involved in an intervention employing an explorative didactic architecture, improved their communication skills, EI score, and clinical practice skills (Kou et al., 2022).

3.4.4. Receptive and simulative

Students who participated in studies that combined the receptive and simulative didactic architectures, developed a more positive attitude during clinical practice, communication performance (Lee and Kim, 2022), better teamwork skills (De Juan Pardo et al., 2021), and higher EI scores after the educational interventions. Students were also more satisfied with their clinical placement (De Juan Pardo et al., 2021).

3.4.5. Receptive, simulative, and explorative

Studies where a pedagogical intervention was developed that combined the receptive, simulative, and explorative didactic architectures improved students' skills related to communication, self-efficacy, empathy (Li et al., 2019), and compassion (Teskereci et al., 2020), as well as their EI levels (Orak et al., 2016; Teskereci et al., 2020).

3.4.6. Receptive, simulative, and collaborative

When combining the receptive (transmissive) pedagogical strategy through face-to-face lessons, simulative pedagogical strategy through PBL, and collaborative pedagogical strategy through group discussions, nursing students' communication skills and EI levels improved (Choi et al., 2015).

Table 2
Characteristics of the included studies.

Study and country	Study aim	Study design	Population sample and context	Data collection	Outline results
Alconero-Camarero et al., 2018 Spain	Analysing the relation between EI, coping strategies and satisfaction related to palliative care.	Observational study	Second-year nursing students	Trait Meta-Mood Scale (TMMS-24); Questionnaire for Dealing with Stress; Student Satisfaction and Self-Confidence in Learning Scale Spanish version (CSLS-Sv)	Participants obtained excellent scores in attention to emotions. They understood the importance of the re-evaluation of patients and social support. Students were also satisfied with the course.
Bailey and Hewison, 2014 UK	Determining the attitudes and feelings concerning end-of-life care.	Mixed-methods study	Third-year nursing students	Frommelt Attitude Toward Care of the Dying (FATCOD) Scale	Quantitative Data Participants improved their attitude to caring for the dying. Qualitative Data Three main themes were reported: 1. Preparation for practice 2.Peer support 3.Engagement with theory and practice
Batmaz et al., 2022 Turkey	Evaluating the effectiveness of nursing education on the development of EI.	Cross-sectional study	First-year nursing students	Bar-ON EQ Emotional Intelligence Scale (Bar-On EQ-i); Coopersmith Self Esteem Inventory (CSEI)	Participants improved self-esteem scores and emotional intelligence scores. Authors reported a positive correlation between the score obtained by students and the course years
Lee and Kim, 2022 Korea	Evaluate the effectiveness of an emotive role-play programme to improve communication skills, clinical performance, and EI.	Quasi-experimental study	Third-year nursing students	Ad hoc questionnaire to analyse noticing, participating, sharing, active listening, accompanying, complimenting, comforting, hoping, forgiving, and accepting. Ad hoc questionnaire for clinical performance based on Yang and Park; EI Scale developed by Wong and Law.	The intervention group improved communication skills, clinical performance, and emotional intelligence score.
Choi et al., 2015 Korea	Evaluate the effectiveness of using video clips to develop communication competence and EI.	Quasi-experimental study	Second-year nursing students	Korean version of the Global Interpersonal Communication Competence Scale; Adult Emotional Quotient Test (AEQT)	Students of the intervention group improved communication skills and emotional intelligence levels.
De Juan Pardo et al., 2021 Spain	Evaluate the effectiveness of participation in a student-led conference on self-perceived leadership competence and satisfaction	Quasi-experimental study	Fourth-year nursing students	Self-Assessment Leadership Instrument; ad hoc self-administered questionnaire, to evaluate satisfaction.	Students of the intervention group improved their leadership ability, critical thinking skills, emotional intelligence scores, teamwork skills, and their satisfaction.
Dix et al., 2021 Australia	Explore the ability to transfer clinical judgement skills into clinical practice following an immersive simulation.	Qualitative study	Third-year nursing students and nursing teacher	Interviews with students and clinical nurse educators	Four themes were reported: Safely collecting the data; Understanding the data to safely make decisions; Emotional intelligence; and Role variations.
Erkayiran and Demirkiran, 2018 Turkey	Evaluate the effectiveness of EI skills training on EI levels and interpersonal relationship.	Quasi-experimental study	First-year nursing students	Bar-On Emotional Quotient Inventory; Interpersonal Style Inventory	Students of the intervention group improved emotional intelligence levels and interpersonal relationship style.
Goudarzian et al., 2019 Iran	Evaluate the effectiveness of a self-care training on EI	Quasi-experimental study	First, second, and, third-year nursing students	Bradberry and Greaves' standard questionnaire	Students of the intervention group improved their emotional intelligence levels
Hayes et al., 2018 Australia	Evaluate the effectiveness of an immersive simulation experiences and guided reflection on the emotions, performance and ability to implement safe administration of medications	Qualitative study	Second-year nursing students	Interviews	Students, after the intervention, understood importance of reflection, impacts of interruptions, and identified some management strategies. Indeed, they developed self-awareness, effective communication, compassion, and empathy.
Hurley et al., 2020 Australia	Understand how students used the knowledge and competencies obtained from the clinical placement	Qualitative study	Nursing students	Interviews	Four themes were reported: greater experiences of resilience; responding positively to mental health consumers; experiences of greater empathy and compassion; and experiences of improved non-technical working skills

(*continued on next page*)

Table 2 (*continued*)

Study and country	Study aim	Study design	Population sample and context	Data collection	Outline results
Kou et al., 2022 China	Evaluate the effectiveness of a mindfulness training to improve abilities of supportive communication, EI, and human caring	RCT	Nursing students	Supportive Care Communication Scale; EI Scale; Caring Ability Inventory	Students of the intervention group improved emotional intelligence levels, caring ability, and supportive communication ability
Larti et al., 2018 Iran	Evaluate the effectiveness of a role-playing training program for empathetic communication with surgical patients	RCT	First, second, third, and fourth-year nursing students	Jefferson Scale of Empathy -Health Profession (Students version)	Students of the intervention group improved their empathy levels, developed perspective-taking and compassionate caring, and understood better how patients feel.
Lee et al., 2018 Taiwan	Evaluate the effectiveness of a situated teaching program to increase empathy.	Quasi-experimental study	Second-year nursing students	Jefferson Scale of Empathy–Health Profession (Student version); OSCE.	Students of the intervention group obtained better scores in JSE-HP-S. For perspective taking, compassionate care and standing in patient's shoes. Indeed, they improved their relational skills.
Li et al., 2019 China	Evaluate the effectiveness of simulation-based on improving tcommunication skills, empathy, and self-efficacy	RCT	First-year nursing students	Clinical communication Ability Scale; Jefferson Scale of Empathy-Health Professionals; General Self-Efficacy Scale	Students of the intervention group improved clinical communication abilities in establishing rapport, listening receptively, confirming with patients and sharing control. They improved their empathy levels and Self-Efficacy
Orak et al., 2016 Iran	Evaluate the effectiveness of training on first-year students the EI.	Quasi-experimental study	First-year nursing students	Modified Schutte Emotional Intelligence Scale	No significant differences were identified between the two study groups
Ruiz-Fernández et al., 2022 Spain	Evaluate the effectiveness of clinical simulation during home visits on self-efficacy, empowerment, management of emotions and perceived stress	Quasi-experimental study	Second-year nursing students	General Self-efficacy Scale; psychological empowerment scale; perceived stress scale (PSS-14)	Students of the intervention group improved scores of self-efficacies, empowerment, and understood the dimensions of the emotions
Sisman and Buzlu, 2022 Turkey	Evaluate the effectiveness of an emotion-focused training program and an interactive activity on recognizing and expressing emotions.	RCT	Second-year nursing students	LEAS Levels of Emotional Awareness Scale; Emotional Expression Scale	The intervention group increased the levels of emotional awareness and emotional expression also 6 months after the intervention.
Teskereci et al., 2020 Turkey	Evaluate the effectiveness of the Caring Behaviour on compassion and EI levels.	Quasi-experimental study	First-year nursing students	EI Evaluation Scale; Compassion Scale	Students of the intervention group improved compassion skills.

3.4.7. Behavioural

Hurley et al. (2020) found that students who participated in an educational programme involving a behavioural pedagogical strategy through a tutorial approach and the collaborative pedagogical strategy through cooperation between students improved their resilience, responded positively to patients affected by mental health, improved their empathy and compassion, and their non-technical skills.

3.4.8. Simulative, explorative, and metacognitive

Moreover, the simulative, explorative, and metacognitive pedagogical strategy combined in an educational programme improved students' levels of empathy and their communicational skills (Lee et al., 2018).

Full information about all the learning outcomes and their associations with the related pedagogical strategies is shown in Table 4.

3.5. Instruments used to evaluate EI in educational programmes

The instruments used to evaluate the effectiveness of the educational programmes varied across the included studies. Some of them were related to EI or some of its characteristics. In other studies, some instruments were chosen because they served the purposes of the study but were not directly associated with EI. An example of this was the Questionnaire for Dealing with Stress (CAE) (Alconero-Camarero et al., 2018).

Regarding one of the characteristics of EI, the most frequently used instrument was the JSE-Health Profession Students version (Larti et al., 2018; Lee et al., 2018; Li et al., 2019). This instrument evaluates, in fact, the levels of empathy in students. In each study, different internal consistency scores were obtained: Cronbach's alpha 0.71 (Larti et al., 2018), Cronbach's alpha 0.89 (Lee et al., 2018), and Cronbach's alpha 0.739 (Li et al., 2019).

With respect to the evaluation of the EI scores, the Trait Meta-Mood Scale (TMMS-24) (Alconero-Camarero et al., 2018; Ruiz-Fernández et al., 2022) and the Emotional Intelligence Scale (Schutte et al., 1998; Kou et al., 2022; Orak et al., 2016) were the most widely used. Only the study by Alconero-Camarero et al. (2018) evaluated the internal consistency of the TMMS-24 instrument: whose subscales obtained a Cronbach's alpha coefficient of 0.86, 0.87, 0.82. The internal consistency of the Emotional Intelligence Scale was very similar across the included studies, although Orak et al. (2016) adapted and modified it for their study, whereby Cronbach'α was 0.90 in Kou et al. (2022)'s study and 0.89 in Orak et al. (2016)'s study. Orak et al. (2016) evaluated the reliability of the instrument by using the test-retest correlation coefficient, whauch was 0.75.

Another frequently used instrument used was Bradberry and Greaves' standard questionnaire (Goudarzian et al., 2019). To evaluate the reliability of this instrument, the authors evaluated the intra-correlation coefficient, which was 0.92 (Goudarzian et al., 2019). To evaluate the level of EI, Teskereci et al. (2020), used the Emotional Intelligence Evaluation Scale. Sisman and Buzlu, 2022 in their study used the Levels of Emotional Awareness Scale (LEAS). Both Teskereci et al. (2020) and Sisman and Buzlu, 2022 did not evaluate the reliability of the instruments. Another instrument selected to assess the programme was the Emotional Intelligence Scale developed by Wong and Law (Lee and

Table 3
Pedagogical strategies used by the included studies.

Study	Didactic architectures	Pedagogical strategies
Alconero-Camarero et al., 2018	Simulative	Simulation
Bailey and Hewison, 2014	Simulative, Receptive (transmissive)	Case studies, Lesson, Simulation
Batmaz et al., 2022	Receptive (transmissive)	Lesson
Lee and Kim, 2022	Simulative, Receptive (transmissive)	Role-playing, Lesson
Choi et al., 2015	Simulative, Receptive (transmissive), Collaborative	Role-playing, Lesson, Discussion
De Juan Pardo et al., 2021	Simulative, Receptive (transmissive)	Simulation, Lesson
Dix et al., 2021	Simulative, Collaborative	Simulation, Cooperative Learning
Erkayiran and Demirkiran, 2018	Receptive (transmissive)	Lesson
Goudarzian et al., 2019	Receptive (transmissive)	Lesson
Hayes et al., 2018	Simulative	Case studies, Role Playing
Hurley et al., 2020	Behavioural (directive-interactive), Collaborative	Tutorial approach, Cooperative learning
Kou et al., 2022	Explorative	Brainstorming
Larti et al., 2018	Simulative	Role-playing
Lee et al., 2018	Simulative, Explorative, Metacognitive	Role-playing, Brainstorming, Self-regulated learning
Li et al., 2019	Simulative, Receptive (transmissive), Explorative	Simulation, Lesson, Brainstorming
Orak et al., 2016	Simulative, Receptive (transmissive), Explorative	Role-playing, Lesson, Brainstorming
Ruiz-Fernández et al., 2022	Simulative	Simulation
Sisman and Buzlu, 2022	Simulative, Receptive (transmissive)	Role-playing, Lesson
Teskereci et al., 2020	Simulative, Receptive (transmissive), Explorative	Role-playing, Lesson, Brainstorming

Kim, 2022): Cronbach'α 0.93.

In some studies, the authors decided to use instruments related to the definition of EI. For example, Batmaz et al. (2022) and Erkayiran and Demirkiran (2018) used the Bar-ON EQ Emotional Intelligence Scale (Bar-On EQ-i), whereas Batmaz et al. (2022) evaluated the reliability of the instruments using Cronbach'α, equal to 0.92. The Adult Emotional Quotient Test (AEQT) related to the theory of Mayer and Salovey theory was used by Choi et al. (2015), and Cronbach' α was 0.77.

4. Discussion

The present systematic review offers an overview of the most effective pedagogical strategies in improving emotional competencies in nursing students. The didactic architecture that most improved EI was the simulative one, as shown in Table 3. Through simulation and role-playing, students improved their clinical practice and soft skills (Niu et al., 2021). In fact, the pedagogical strategy of simulation could be conducted either face-to-face (Lee and Kim, 2022), with the use of manikins or actors, or by using Virtual Reality (Priambodo et al., 2022; Shorey and Ng, 2021). Simulation creates a safe environment where students can simulate a clinical situation based on real-life situations (Niu et al., 2021; Hanshaw and Dickerson, 2020). This context is safe both because it is free from judgement or evaluation (Niu et al., 2021) and because it comes with no risk for patients or their informal carers (Hanshaw and Dickerson, 2020). Playing continued scenarios could reinforce students' self-confidence (Shorey and Ng, 2021) and reduce their anxiety due to the scenario itself or clinical practice (Priambodo et al., 2022). Moreover, through simulation students have the possibility to reduce the gap between theory and practice (Alconero-Camarero et al., 2018; Carrero-Planells et al., 2021). In nursing education, simulation used to be a predominantly pedagogical strategy, because it enables to build clinical skills and knowledge in a context similar to the

Table 4
Outcomes achieved after completing an EI programme.

Didactic architectures	Outcomes obtained after EI educational programme												
	Compassion	EI	Self-esteem	Self-awareness	Self-efficacy	Empathy	Interpersonal skills	Communication skills	Critical thinking	Satisfaction	Clinical practice skills	Teamwork skills
Receptive												
Simulative	+	+	+	+	+	+	+		+		+	+
Explorative		+						+			+	
Receptive		+						+			+	+
Simulative		+										
Receptive												
Simulative	+	+			+	+		+		+		
Explorative												
Receptive		+						+				
Simulative												
Collaborative												
Behavioural	+	+			+	+	+	+			+	
Cooperative												
Simulative	+			+	+	+					+	+
Explorative												
Metacognitive												

real clinical setting (Fegran et al., 2023). The debriefing sessions after simulation or role-playing activities offer students the chance to reflect and gain a better understanding of what they did, what was correct or wrong, and study the importance of communication skills and emotions (Hanshaw and Dickerson, 2020; Niu et al., 2021; Priambodo et al., 2022; Fegran et al., 2023). In the debriefing session, the tutors became facilitators who could guide the students through reflections and structured discussions to promote best practice (Fegran et al., 2023). Simulation and debriefing sessions created a context where students could mitigate anxiety and enrich their skills (Alconero-Camarero et al., 2018; Fegran et al., 2023). As reported by Yu et al. (2021), simulations prepare for stressful clinical situations and offer a sense of psychological stability.

Virtual Reality (VR) technology enables students to participant in a more controlled simulated setting where they can make mistakes and repeat the simulations at their own pace (Dang et al., 2018). In VR simulation, students are immersed in a virtual reality where there are no relations with others, so it is more difficult to develop psychosocial communication or emotional competence (EC) (Dean et al., 2020). To improve EC through VR simulation, technology could involve the use of artificial intelligence to enable the VR simulated patient to analyse, execute cognitive activities, words recognition, and decision-making (Ahmed et al., 2022).

The didactic architectures of receptive (e.g., lesson face-to-face), simulative, explorative, and the combination of behavioural (e.g., tutorial approach) and collaborative learning (e.g., cooperative learning). Developed EI, clinical practice skills, and communication skills (Batmaz et al., 2022; De Juan Pardo et al., 2021; Lee and Kim, 2022). The combination of didactic architectures is used also for the education of other health students (e.g. psychologists). In their study, Redondo-Rodríguez et al. combined the didactic architectures of simulative, collaborative learning, and behavioural obtaining higher levels of EC in university students (Redondo-Rodríguez et al., 2022).

In particular, for a nurse it is important to develop communication skills to help others and provide better care (Avallin et al., 2020). In addition, when nurses have good communication skills, they can establish better relationship with patients based on trust (Afriyie, 2020). Investing in the improvement of communication skills and understanding one's own emotions and those of others, could also be blended with the implementation of the Fundamentals of Care Framework (Kitson, 2018) in nursing education. In fact, the core of this framework is the relationship of trust with patients and caregivers (Feo et al., 2017). Emotionally competent nurses could improve their relationships with patients and caregivers, with a view to improving patient centred care (Raeissi et al., 2019). At the same time, a better understanding of how to manage one's own emotions could help nurses to reduce stress and burnout (Mao et al., 2021; Rakhshani et al., 2018), therefore improving the wellbeing of nurses and reducing absenteeism (Gillman et al., 2015). Considering the critical shortage of nurses especially in recent years (Sasso et al., 2019), and nurses' stress and burnout (Tamata and Mohammadnezhad, 2023), it is crucial pivotal to invest in educational programmes that enhance EC.

4.1. Limitations

This study has some limitations. Firstly, after reading the full texts, we excluded from our review many papers that focused only on empathy. This may have reduced the effectiveness of this review, but our aim was to include only studies that focused directly on EI. In addition, the included studies did not use the same instruments to assess the levels of EI, so it was not possible to conduct a meta-analysis. Finally, we included only papers published in English or Italian language, which could have implied the exclusion of important studies in other languages.

5. Conclusions

Through this systematic review we analysed the most effective didactic architectures and pedagogical strategies to improve EI and emotional competences in nursing students. Results obtained from this review highlight the pedagogical effectiveness of using simulation and role-playing activities. Implementing simulation through the use of manikins or VR technology is fundamental for nursing education. More investments in developing and improving EI competencies in nursing students could offer a new landscape for patient-centred nursing care with a significant benefit also for nurses' own well-being.

CRediT authorship contribution statement

Francesca Napolitano: Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Michela Calzolari:** Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Sara Di Pietro:** Writing – original draft, Investigation, Formal analysis, Data curation, Conceptualization. **Nicola Pagnucci:** Writing – review & editing, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Milko Zanini:** Writing – review & editing, Supervision, Conceptualization. **Gianluca Catania:** Writing – review & editing, Supervision, Conceptualization. **Giuseppe Aleo:** Writing – review & editing, Supervision, Conceptualization. **Lisa Gomes:** Writing – review & editing, Supervision, Conceptualization. **Loredana Sasso:** Writing – review & editing, Supervision, Conceptualization. **Annamaria Bagnasco:** Writing – review & editing, Supervision, Project administration, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.nedt.2024.106337.

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