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## ► To cite this version:

Manon Dugué, Olivier Sirost, Fabrice Dosseville. A literature review of emotional intelligence and nursing education. *Nurse Education in Practice*, 2021, 54, pp.103124. 10.1016/j.nepr.2021.103124 . hal-03279767

**HAL Id: hal-03279767**

**<https://hal.science/hal-03279767v1>**

Submitted on 2 Aug 2023

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# A LITERATURE REVIEW OF EMOTIONAL INTELLIGENCE AND NURSING EDUCATION

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This study was not funded and there is no conflict of interest.

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## **Abstract**

**Aim:** The purpose of this study is to investigate the current state of knowledge about emotional intelligence (EI) in nursing education

**Background:** Human relationships and emotions are an integral part of nursing care and contribute to care quality. This part of the profession must be addressed in nursing education to prepare students and deal with their emotions and the patients's. Research on emotional intelligence (EI) in nursing has been particularly developed recently. A broad understanding of many benefits of EI is crucial to include EI in this training program.

**Design:** Systematic literature review

**Methods:** Undertaken using electronic database (Cairn; PubMed; Science Direct; Wiley online library) and specific search terms. This research covered articles published in English and French between 2007 and 2021. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines (PRISMA) directed the systematic review process.

**Results:** 57 articles are included in this systematic review. The literature focuses on EI and nursing education. The findings categorized into four themes: EI and performances; EI and Physical and mental health; EI and Social Relationship; and EI program.

**Conclusions:** This literature review reveals that EI has many benefits in nursing students. Several training programs aimed at developing this concept have proven to be effective in

nursing education. We believe that a synthesis of this knowledge will then allow us to better understand the benefits of EI for a further implementation in nursing education. Perspectives and recommendations will also be formulated to enable the implementation of emotional skill development programs in such training.

**Key words:** emotional intelligence, health, nursing education, performances, social relationships, training

## **1. Introduction**

The demands of nursing practice, such as facing death or illnesses, increasing workloads, time pressure, and disregard for hierarchy, trigger significant perceived stress in this professional field (Del Sarto Azevedo, Nery & Cardoso, 2017; Moustaka & Constandinis, 2010). This job, which is focused on technical and compassionate care, requires significant emotional and physical commitment. Moreover, increasing knowledge about emotional labor improves care for patients (e.g., respect for dignity and integrity, support; Culha & Acaroglu, 2018). Emotional labor refers to the management of feelings to generate facial and bodily expressions for the public (Hochschild, 1983). Human relationships and emotions are an integral part of nursing care and contribute to care quality. When nurses understand, identify, and manage their own and patients' emotions, satisfaction with the patient experience and care provided is enhanced (Nightingale, Spiby, Sheen & Slade, 2018). Nursing students currently appear poorly prepared for this emotional labor (Dugué & Dosseville, 2018). It is important that they be prepared, but this is not often the case and the teaching content is sometimes weak. Nursing students experience high stress and emotions related to clinical training, particularly in the first year (Dugué & Dosseville, 2018; Dugué, Garnarczyk, & Dosseville, 2018; Gurkova & Zelenikova, 2018).

Some researchers showed a positive influence of Emotional Intelligence (EI) on emotional labor (Foster & McCloughen 2020; Karimi, Leggat, Donohue, Farrell, & Couper, 2014; Mikolajczak, Menil, & Luminet, 2007; Yin, Lee, Zhang, & Jin, 2013). EI is defined as the ability of an individual to understand use, identify, express and regulate his or her emotions and those of others (Mikolajczak, 2009). To include this psychological determinant in training would promote adaptive functioning and resilience in stressful situations (Schneider, Lyons, & Khazon, 2013). Furthermore, these students could cope more effectively with the stress in their work environment (Por, Barribal, Fitzpatrick & Roberts,

2011). Research devoted to EI has two conceptual models: the Ability model (Mayer & Salovey, 1997) and the Traits model (Bar-On, 2006). A third elaborate theoretical perspective of EI that is gaining momentum in health-related contexts is the Tripartite model (Mikolajczak, 2009).

On the one hand, the ability model conceives EI as an “ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth” (Mayer & Salovey, 1997, p. 10). This ability encompasses four dimensions: perception of emotion, emotion’s facilitation of thinking, understanding, and analyzing emotions, and regulation of emotions. These dimensions are classified hierarchically by the authors. Thus, the emotional management branch is considered the most important and complex (Mayer & Salovey, 1997). The ability model of EI (ABEI) is based on the Mayer Salovey Caruso Emotional Intelligence Test (MSCEIT) and is a performance measure on specific tasks (Mayer, Salovey, & Caruso, 2002).

On the other hand, trait models consider EI as a characteristic associated with the individual’s personality. It is a set of social skills and personality traits (Bar-On, 2006). This ability encompasses five dimensions: intrapersonal skills (e.g., self-esteem, assertiveness, etc.), interpersonal skills (e.g., empathy), adaptability (e.g., flexibility, problem-solving), stress management, and general mood components (e.g., optimism). In this trait model, EI is evaluated via personality-like questionnaires (e.g., Bar-On EQi, Bar-On, 2004; SEIS-Schutte Emotional Intelligence Scale, Schutte et al., 1998; Trait Emotional Intelligence Questionnaire, TEIQue, Petrides, 2009; TMMS, Trait Meta-Mood Scale, Salovey, Mayer, Goldman, Turvey, & Palfai, 1995). While ability tests assess a maximum performance, trait questionnaires assess a global performance (Petrides & Furnham, 2003).

The third theoretical foundation, the tripartite model, is presented as a useful alternative to the traditional conceptualization of EI as a trait or ability. This theoretical underpinning has several practical advantages that could be useful for nursing training. This model has three levels: knowledge, abilities, and traits (Mikolajczak, 2009). The knowledge level refers to the knowledge that the individual may have about emotional regulation techniques without being able to apply them. The ability level refers to the ability to apply emotion regulation strategies when asked to do so during an implementation exercise such as breathing exercise. This does not mean that the individual is able to apply these strategies in all emotional experiences. The trait level refers to the way the individual usually copes in emotional situations.

Currently, a lack of consensus about EI's definition and the many measurement tools complicate the search on emotional intelligence and the understanding of this concept. The connection between the three levels of the tripartite model might be helpful for nursing education and this model enables encapsulation of the previously opposing perspectives (i.e., EI as an ability vs. as a trait). However, the models used in studies of nursing students focused on one of the two approaches mentioned above. Overcoming this barrier could prove to have benefits for nursing education.

Research on EI in nursing has particularly developed recently, highlighting the importance of including this concept in the existing training. Four previous literature reviews have addressed the topic of emotional intelligence of nursing students. However, the first focuses on the link between EI and resilience (Cleary, Visentin, West, Lopez, and Kornhaber, 2018). The second studies the link between EI and affective events (Lewis, Neville, & Ashkanasy, 2017). The third analyses EI and academic performance in health students but only seven studies concern nursing students (Singh, Kulkarni & Gupta, 2020). The last one explores the state of knowledge on emotional intelligence education in pre-registration

nursing programs (Foster, McCloughen, Delgado, Kefalas & Harkness, 2015). In our view, EI plays a role in many more areas than resilience or affective events. That is why we decided to carry out this review to identify more areas where EI plays a role. This literature review is particularly built on the work of Petrides and collaborators (2016). Their work presents the results of research on EI and its role on different areas of life (i.e., performance, health, social). Thus, the aim of this article is to briefly present the research findings about EI on these different life areas as well as on EI training for nursing students. The synthesis of this knowledge will then allow us to understand the influence of EI on the performance, physical and mental health, and social relationships of nursing students. Perspectives and recommendations will also be formulated to enable the implementation of emotional skill development programs in such training.

## 2. Method

### 2.1. Data source

This systematic review targeted all empirical studies on EI in nursing education. Four search engines were used: Cairn, PubMed, Science Direct, and Wiley Online Library. The search was conducted in September of 2020, reconducted in April 2021 and included different combinations of the following keywords: nursing students, nursing education, nurse education, Emotional Intelligence (EI), emotional skills (ES), and emotional competencies (EC). These keywords were used for each database.

### 2.2. Inclusion and exclusion

We limited the search to articles published in the French and English. Research on EI in nursing education is recent so there is no restriction on the year of publication. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines (PRISMA) directed the systematic review process (Moher, Liberati, Tetzlaff, & Altman, 2009). The



search strategy is the same for each database. Keywords are combined (e.g., nursing students and emotional intelligence) and the titles associated with these keywords are analyzed. Articles were excluded if they did not focus on nursing students and EI and if compares EI between students without other variables. Non-peer-reviewed works such as doctoral dissertations and published abstracts (without a full method section) were excluded (Figure 1).

### 2.3. Study selection

Articles identified in the figure 1 as relevant are uploaded. Abstracts reviewed by the researcher and those that met the inclusion and exclusion criteria were fully reviewed. Screening of the articles began with examining methodology, focusing on the EI model used and variables measured. The search identified 465 titles in the databases. After deleting duplicates and unavailable articles, 94 papers are analyzed. After title and abstract screening following by detailed analysis of the full papers, 57 articles met the inclusion criteria and were reviewed.

### 2.4. Analysis

Analysis of the articles began with an examination of summary, keywords, methodology, and text. Relevant data, such as authors, country, year, study purpose, sample, methods, EI model used, and variables studied are summarized in Table 1. After the synthesis of articles, different themes were identified and studies with similar themes were grouped. To include studies in the literature review, it was necessary that (a) the inclusion/exclusion criteria be described in sufficient detail to allow replication, (b) the characteristics of the population be indicated, (c) the methodology be detailed. Finally, the issue of study reproducibility was central to the qualitative assessment of the studies.

## 3. Results

Data analysis uncovered 57 relevant articles published between 2007 and 2021. Most studies included in our review originated in Spain and the USA with smaller representations from France, Canada, Egypt, Italy, South Korea, and Israel. To address our research question, we categorized the findings into four themes: EI and performances; Physical and mental health; EI and Social Relationship; and EI program. Each theme has been discussed with more details.

### 3.1.EI and Performances

The influence of EI on students' performances has been the most frequently mentioned themes in our corpus since 24 studies addressed this subject. Several studies show that EI linked to improved productivity and clinical performance (Beauvais, Brady, O'shea & Griffin, 2011; Cleary et al., 2018; Culha & Acaroglu, 2018; Foster & McCloughen 2020; Kim & Shin, 2021; Marvos & Hale, 2015; Li, Cao, Cao, & Liu, 2015; Por et al., 2011; Sánchez Expósito et al., 2018; Singh et al., 2020). Moreover, increasing students' emotional skills improve their patient care practices. When students managed and were aware of their own and patients' emotions, care was more individualized, ethical and professional (Culha & Acaroglu, 2018). Their clinical performances were also better (Marvos & Hale, 2015). Furthermore, emotional intelligence can helps nursing students cope with difficulties in clinical work (Foster & McCloughen, 2020; Li et al., 2015). Consequently, students will focus more on solving the problem and openly expressing their emotions, which will allow better management (Alconero-Camarero, Sarabia-Cobo, González-Gómez, Ibáñez-Rementería, Lavín-Alconero, & Sarabia-Cobo, 2018; Kim & Shin, 2021). Only one study did not influence EI level on student academics success (Benington, Hussey & Long, 2020)

Critical thinking is considered as key element of clinical performance because it enables the implementation of evidence-based nursing practice and thus improves the patient care (Rubenfield & Schefer, 1999). Moreover, three studies demonstrated interest in the link

between EI and this dimension (Hasanpour, Bagheri, Ghaedi Heidari, 2018; Kaya, Senyuva & Bodur, 2017; Kaya, Senyuva & Bodur, 2018; Kim & Shin, 2021). However, the results of these studies are controversial. Two of them do not highlight any significant difference between EI and critical thinking (Hasanpour et al., 2018; Kaya et al., 2018) while the last one shows that students with a high level of critical thinking have higher EI and that this increases over time (Kaya et al., 2017.; Kim & Shin, 2021). Further studies are needed to establish links between these two dimensions.

EI is also linked to academic success. Students who better manage their emotions than others have better academic performance (Beauvais, Stewart, DeNisco & Beauvais, 2014; Codier & Odell, 2014; Fernandez, Salamonson & Griffiths, 2012; Foster, Fethney, Mckenzie, Fisher, Harkness & Kozlowski, 2017; Por et al., 2011; Sharon & Grinberg, 2018; Shanta & Gargiulo, 2014) and only one study doesn't demonstrate a significant effect (Stenhouse, Snowden, Young, Carver, Carver & Brown, 2016). EI and self-efficacy are negatively associated with academic procrastination (Guo, Yin, Wang, Nie & Wang, 2019). Academic procrastination leads to range of negative outcomes (Guo et al., 2019). Active coping strategies such as focus on solving problems and emotional expression and satisfaction with learning correlated with EI (Alconero-Camarero et al., 2018; Por et al., 2011). In addition, these students persevere in their training more than students with lower EI levels who are more likely to leave the program (Cleary et al., 2018; Marvos & Hale, 2015). The risks of dropping out of nursing studies are generally due to poor stress management, which can have harmful consequences for the students, particularly on their health.

### 3.2.EI and Physical and Mental Health

The literature search identified 12 studies that had examined the relationship between EI and students' physical and mental health. Emotionally more competent the students are, the more satisfied they are with their life and happiness (Aradilla-Herrero et al., 2014b;

Carvalho, Guerrero, & Chambel, 2018; Ruiz-Aranda, Extremera, & Pineda-Galàn, 2014). They also have lower levels of stress, anxiety, and depression and are less prone to burnout (Aradilla-Herrero et al., 2014b; Carvalho et al., 2018; Dugué et al., 2018; Foster et al., 2018; Lewis et al., 2017; Ruiz-Aranda et al., 2014; Zhang et al., 2016). In addition, these students have a better health and greater well-being (Dugué et al., 2018; Montes-Berges & Augusto, 2007; Por et al., 2011; Ruiz-Aranda et al., 2014). Moreover, a study of 400 Iranians students in health training (i.e. medicine, pharmacy and nursing) shows a positive correlation between EI and sleep quality and a negative correlation between EI and general tiredness (Abdali, Nobaha & Ghorbani, 2019). Furthermore, a study of 275 Spanish nursing students found that students with a higher EI level have a low tendency to consume alcohol and have protected sex and have a balanced diet (Lana, Baizan, Faya-Ornia, & Lopez, 2015). Finally, these students have less risk to have suicidal thoughts (Aradilla-Herrero et al., 2014a) and EI may have a protective effect against stress for nursing students.

Different studies show that some personality traits correlated with the EI level (Augusto Landa, López-Zafra, Aguilar-Luzón, & de Ugarte, 2009; Dugué et al., 2018). The study of Dugué and collaborators (2018) revealed that the neuroticism trait is a variable that can explain the high level of stress among students (Dugué et al., 2018). Augusto Landa and colleagues (2009) showed that students with a high extroversion trait are more emotionally intelligent than those with a high neuroticism trait. Clinical training entails situations involving death and anxiety. In fact, several studies have shown that students with low EI have a high level of anxiety when confronted with such situations (Aradilla-Herrero et al., 2012; Aradilla-Herrero et al., 2014b). The amount of self-esteem also correlated with the level of anxiety about death and EI level (Aradilla-Herrero et al., 2014b).

Neuroticism trait, high anxiety, and low self-esteem correlated with EI level (Aradilla-Herrero et al., 2012; Aradilla-Herrero et al., 2014b; Augusto Landa, 2009; Dugué et al.,

2018). Thus, it could be interesting to identify students with these characteristics at the beginning of the training, to allow specific support for preventing potential risks related to this emotional trait. In fact, it is extremely important that a student feels good in his clinical training to provide adequate care and maintain good relationships with patients, family, and health care team.

### 3.3.EI and Social Relationships

Ten studies showed a link between EI and social relationships. Two studies showed that EI positively correlated with empathy (Di Lorenzo, Venturelli, Spiga, & Ferri, 2019; Hajibabae, Ameri, Salehi, & Hosseini 2018). Emotionally intelligent students establish better relationships with patients and their family and better manage their emotions (Foster & McCloughen 2020; Hajibabae et al., 2018). It also plays a role in the students' self-compassion, which is more likely to make them attentive to the emotions he or she perceives (Senyuva, Kaya, Isik & Bordur, 2014). Thus, this emotional listening will allow more effective communication with the patients and their family during the course of care (Senuyva et al., 2014). In addition, EI positively correlated with the students' clinical communication (Kong, Liu, Li, Fang, Kang & Li, 2016). This means that the student will transmit information to the patient more effectively and have a better relationship with the patient (Kong et al., 2016).

The EI level also affects students' ability to manage conflict, especially with their supervisor (Chan, Sit & Lau, 2014; McCloughen & Foster, 2018). In fact, students will integrate emotionally intelligent behaviors such as reflection and reframing, compromise, calm, discomfort control, and appropriate emotional expression (Chan et al., 2014; McCloughen & Foster, 2018). When the EI level is low, students will attempt to avoid confrontation with their supervisor (Chan et al., 2014).

Finally, it would appear that the implementation of emotionally intelligent leadership promotes the achievement of high-quality care and compassion from health professionals (Carragher & Gormley, 2016). Indeed, a study of 320 students found a significant relationship between EI and people-oriented leadership (Yildirim, Kantek & Yilmaz, 2021). Indeed, a longitudinal study of 52 nursing students found that changes in EI correlated with changes in leadership and some care capacities (Benson, Martin, Ploeg & Wessel, 2012). The implementation of intervention programs focused on EI development could improve these different dimensions necessary to achieve quality care.

### 3.4.EI Program

Eleven studies focus on intervention program for developing emotional skills in nursing education (Donnaint, Marchand, & Gagnayre, 2016; Gómez-Díaz, et al., 2017; Goudarzian et al., 2019; Hurley, Hutchinson, Kozlowski, Gadd & Vorst, 2019; Orak et al., 2016; Ramadan, Abdel-Latif Abdel-Sattar, Abozeid, Abd Elwahab El Sayed, 2020; Shahbazi, Heidari, Sureshjani, & Rezaei, 2018; Szeles, 2015; Teskereci, Öncel & Arslan, 2020). Programs have different forms. Seven studies each provided 6 to 14 sessions with 45-120 min per session (Choi et al., 2015; ErKayiran & Damirkiran, 2018; Goudarzian et al., 2019; Orak et al., 2016; Ramadan et al., 2020; Shahbazi et al., 2018; Teskereci et al., 2020). These sessions took the form of lectures, role plays, case studies and group discussions. While others opted for short programs, two of these programs focused on setting up four-hour workshops on specific topics (Gómez-Díaz et al., 2017; Hurley et al., 2019). The last two consisted of individual interviews based on the analysis of the students' emotional situation (Donnaint, Marchand, & Gagnayre, 2016; Szeles, 2015). Except for Donnaint (2016), Gómez-Díaz, (2017) and Szeles (2015), all researchers used control and experimental groups. Mosy studies showed significant improvement in EI for students who participated in the EI intervention (Choi et al., 2015; Donnaint et al., 2016; ErKayiran & Demirkiran, 2018;

Gómez-Díaz, et al., 2017; Goudarzian et al., 2019; Hurley et al., 2019; Shahbazi et al., 2018) and the study of Ramadan and collaborators also showed significant improvement in clinical performance in addition to the level of EI (Ramadan et al., 2020). Only the studies of Orak (2016), Szeles (2015) and Teskereci (2020) could not highlight this significant improvement. Therefore, EI can be increased through targeted educational interventions; moreover, including EI in training programs would promote the students' well-being. Although the interest of EI for nursing students is known, programs oriented towards this concept are not sufficiently present in the training programs (Foster et al., 2015).

#### **4. Discussion**

This review synthesized several articles related to EI and nursing students. Most the studies included in our review originated in Spain and the USA with smaller representations from France, Canada, Egypt, Italy, South Korea, and Israel. All articles identified in this review were published after 2007. This reduced number of articles published within 10 years shows that EI in nursing students is a relatively recent subject and can develop in view of the demands of this profession. The integration of the concept of EI into nursing education therefore seems important. However, several approaches are possible (i.e., ability vs. trait model) and many assessment tools can be used. Many instruments, mainly self-assessment questionnaires, were used in the various studies analyzed. Comparison of the different studies is difficult as the tools and measures used are different from one another. It shows a lack of consensus about the meaning of EI and a variety of methods and tools complicates the understanding of research on EI and nursing care. Some tools such as MSCEIT are difficult to access because they are not free. This concept still needs to be studied to enable it to be integrated into nursing education and meet the students' needs.

The integration of the concept of EI into nursing education using the tripartite model may help to better prepare students for the emotional demands of the profession. Indeed, an

EI development program that integrates knowledge of what EI is can be useful in nursing education, combined with exercises in applying this knowledge (i.e., ability), which could improve students' behaviors in emotional situations (i.e., trait). Moreover, a study by Campo and colleagues (2015) with athletes based on the tripartite model shows that an intervention that affects EI knowledge and ability promotes long-term change in the EI trait. Thus, we can infer that this kind of intervention based on tripartite model and the peculiarity of nursing practice could prepare students to deal with emotional demands of practice. The implementation of experimental qualitative studies in nursing education using this method would make it possible to address this hypothesis.

From the literature review, we found that EI can help nursing students to be better prepared for the emotional work that this profession entails. Indeed, a high level of EI allows students to perform better, better manage stress and emotions (Akhu-Zaheya, Shaban, & Khater, 2015; Aradilla-Herrero et al., 2014b; Beauvais et al., 2014; Carvalho et al., 2018; Dugué & Dosseville, 2018; Foster et al., 2018; Laborde, Dosseville & Scelles, 2010; Lewis et al., 2017; Ruiz-Aranda et al., 2014; Zhang et al., 2016), be healthier, and have better relationships with patients, their family, and the health care team (Chan et al., 2014; Di Lorenzo et al., 2019; Hajibabae et al., 2018; Kong et al., 2016; McCloughen & Foster, 2018; Montes-Berges & Augusto, 2007; Por et al., 2011; Ruiz-Aranda et al., 2014; Senyuva et al., 2014). Research has shown the positive influence of these competencies on students' success in nursing profession. In nursing practice, coping with emotions is essential because nursing practice is not only about technical care but also includes relational care and human relationships. Emotions are an integral part of the care professions (LeBlanc, McCornel & Monteiro, 2015).

There are many stressors in the nursing education (Barboza & Soares, 2012; Dugué et al., 2018; Edward, Burnard, Bennett, & Hebden, 2009; Gibbons, Dempster, & Moutray,



2008; Gibbons, 2010; Pulido-Martos et al., 2012; Shaban et al., 2012; Sharma & Kaur, 2011). However, EI could help students to manage them better (Aradilla-Herrero et al., 2014b; Carvalho et al., 2018; Dugué & Dosseville, 2018; Foster et al., 2018; Lewis et al., 2017; Ruiz-Aranda et al., 2014; Zhang et al., 2016) but also in the health professions (Trifunovic, Jatic & Kulenovic, 2017; . Karimi, Leggat, Donohue, Farrell & Couper, 2014). In fact, in a favorable context of the individual, stress will increase vigilance, attention, motivation, and concentration, allowing improvement in performance. In this case, the stress correlated positively with academic and clinical performance (Akhu-Zaheya et al., 2015; Beauvais et al., 2014). Indeed, some perceived stress and physiological excitation is necessary to realize an optimal performance (Gibbons et al., 2008). In addition, the optimal stress level allows students to experience a sense of psychological well-being and general satisfaction (Gibbons et al., 2008; Gibbons, Dempster, & Moutray, 2011; Walker, Rossi, Anastasi, Gray-Ganter, & Tennent, 2016). Conversely, in an unfavorable context, stress can lead to absenteeism, dropping out of training somatic illness, emergence of risk behaviors, sleep disorders, and increasing consumption of psychotropic drugs (Rice, 2012). Stress is not necessarily harmful for an individual's health, and it can even be beneficial. It depends on the students' perception and use of coping strategies. Educating students about the beneficial effects of stress and effective coping strategies for stress management would help limit the unavoidable negative effects of stressors. Indeed, the nursing profession involves being confronted with situations that can be emotionally exhausting (e.g., the confrontation with death, the announcement of a serious pathology ...; Karimi et al., 2014). Moreover, the emotions generated by these situations can also lead to stress. Furthermore, nursing profession is recognized as being particularly at risk of burnout (Jeung, Kim & Chang 2018; Shah, Gandrakota & Cimiotti, 2021). Nurses must be trained to deal with the psychological and emotional difficulties of the job.

In addition, to overcome stress, students spend most of their time on academic tasks (Mirzaei, Oskouie, & Rafii, 2012). This leads to attrition or even decrease in physical activities practice (Dugué & Dosseville, 2018). Students also are more susceptible to poor physio-psycho-social health (Labrague, 2013). However, EI correlated negatively with psychoactive substance consumption (Trinidad & Johnson, 2002) and positively with the health of the individual (Montes-Berges & Augusto, 2007; Por et al., 2011; Ruiz-Aranda et al., 2014). In addition, students regularly participating in physical activities had higher EI level, managed stress better, and adapted more effectively than inactive students (Wang et al., 2020). Thus, the implementation of an intervention program focusing on the development of EI integrated with physical activity might be an effective way to improve psychological, physical, and emotional health. These interventions could also benefit to all health professionals. The setting up of sports halls in schools and health institutions could be a solution to develop this type of intervention in these structures.

Student-centered learning environments that emphasize human and caring relationships within the academic and clinical environment help students to face new challenges and cope with their training-related stressors (Del Prato, Bankert, Grust, & Joseph, 2011). However, people with low levels of interpersonal skills may have difficulties in social interactions, particularly with supervisors and patients, and isolate themselves (Riggio & Lee, 2007). Several studies suggest that EI correlates with good conflict management skills with supervisors, better clinical communication, and better relationships with patients and their families (Chan et al., 2014; Di Lorenzo et al., 2019; Hajibabae et al., 2018; Kong et al., 2016; McCloughen & Foster, 2018; Senyuva et al., 2014). These skills are at the heart of nursing profession. It is important that students can learn to develop these skills in their training. Thus, the implementation of an EI intervention emphasizing human and caring relationships could be beneficial for these students. These interventions could also be

beneficial for health professionals. Indeed, there was a significant improvement in nurses' EI levels after participation in an EI program as well as in their general health, job satisfaction, emotional care planning, task-oriented coping strategies and a decrease in situational anxiety (Codier, Freitas & Muneno, 2013; Kozlowski, Hutchinson, Hurley & Browne, 2018; Nooryan, Gasaparyan, Sharif & Zoladi, 2012; Sarabia-Cobo et al., 2017; Sharif, Rezaie, Keshavarzi, Mansoori & Ghadakpoor, 2013).

## 5. Conclusion

Studies on EI and nursing students have been developed over the past decade. There is a consensus that a high level of EI is beneficial to students. In fact, emotionally intelligent students or healthcare professionals are more efficient, better manage stress and emotions, have better health, and have better relationships with patients, families, and healthcare teams than do the others. However, training based on emotional development is scarce in nursing education programs or healthcare education in general while emotions are an integral part of the care professions. In addition, the diversity of models and tools used complicates the comparison between studies. Some researchers advocate the ability model while others support the trait model. These models do not conflict but are complementary (Mikolajczak, 2009). Thus, the implementation of a training program focusing on knowledge, ability, and trait could allow effective development of EI for these students but also healthcare professionals in general. Many EI intervention programs focusing on this model have shown a significant improvement in EI level of participants (e.g., Campo et al., 2015; Crombie, Lombard, & Noakes, 2011; Nelis, Kotsou, Quoidbach, Hansenne, Weytens, Dupuis, & Mikolajczak, 2011; Ruiz-Aranda et al., 2012). For example, a study by Nélis and collaborators (2011) showed that an 18-hour intervention with short conferences, role plays, group discussions, case examples, and board journals significantly increased students' EI. Another study with rugby players focused on knowledge of EI and applying exercises, video

analysis, discussion about emotional events, routine implementation, and board journals showed a positive improvement in EI level (Campo et al., 2015). Based on these studies, which have shown positive results, it is possible to create an intervention program for nursing students adapted to their future profession. For example, this topic could be structured around introductory conferences to provide knowledge on emotional regulation techniques. The conferences could then be followed by exercises based on specific situations in nursing practice. Finally, an evaluation could allow to assess if these attitudes change gradually in their private and professional life.

Several programs have been implemented for nursing students. None of the studies compared the influence that both program duration and content could have on improving EI level. For example, we believe that a short intervention focused on few conferences would be less effective than a long one focused on applying emotional regulation exercises in a nursing context. In addition, according to Wang (2020), students who practice regular physical activity have higher EI level, manage stress better, and cope better than do the inactive students. We can suggest that physical activity including emotional development exercises could be effective. This could also be beneficial to students' health, as physically active students experience less stress and have a better perception of their health (Décamps, Boujut, & Brisset, 2012; Sundblad, Jansson, Saartok, Renstrom & Engstrom, 2008). Finally, such training should be implemented from the first year of the program. In fact, the level of stress and emotion is particularly high among students when they enter the training (Dugué & Dosseville, 2018).

However, this study has some limitations. Only articles were used. A review of the grey literature could have provided additional data to support the findings. Moreover, not all databases are accessible in France. Thus, some references could not be accessed in their entirety and be included in the review. However, searches using the major search engines as

quoted in this review provide a comprehensive review to the research question. Only articles in French and English were included, corresponding to the languages mastered by the papers's authors. Thus, some studies could not be analyzed. In addition, only the main author carried out the literature review on the subject. The involvement of several researchers could have made it possible to obtain more articles.

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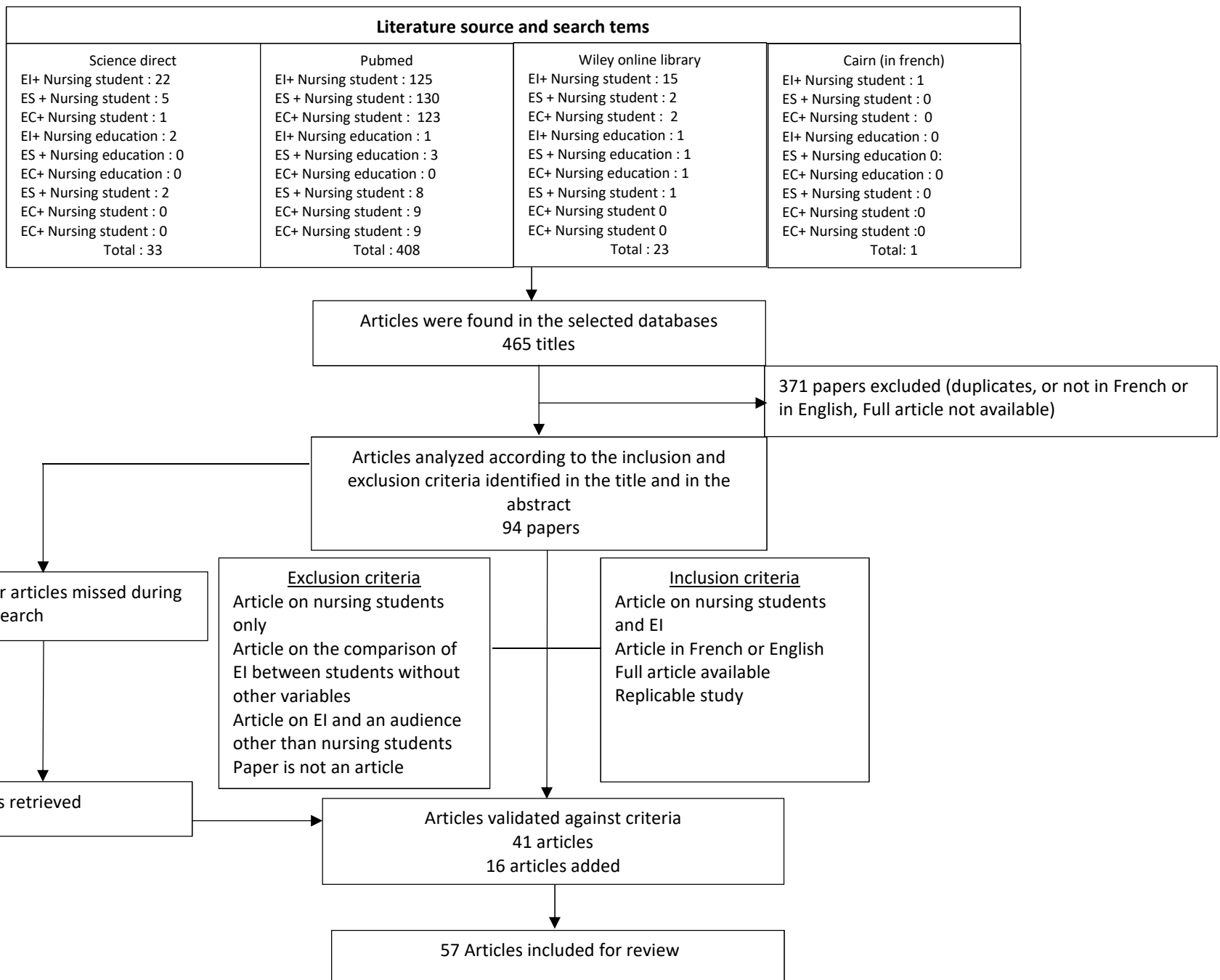


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**Figure 1. Search strategy with PRISMA guidelines**

**Tableau 1.** Articles analyzed

Auteurs	Year	Pays	Aim	Study Design	Sample Size	Variables	EI model
Abdali et al	2019	Iranian	Relation between EI, sleep disorders and fatigue in health students	Cross-sectional	400 students	Sleep quality Fatigue	BGEII
Alconero-Camarero et al	2018	Spain	Relation between EI, coping style and self-learning satisfaction	Descriptive, observational and correlational study	74 nursing students in second year	Dealing with stress Satisfaction and self-confidence Learning Suicide risk	TMMS24
Aradilla-Herrero et al	2014	Spain	Risk prevalence and link with EI, depression, anxiety	Cross-sectional study	93 nursing students		TMMS 24
Aradilla-Herrero et al	2012	Spain	Link between EI and death attitudes	Cross-sectional and correlational study	243 nursing students	Fear of death Death anxiety Death depression Death obsession	TMMS 24
Aradilla-Herrero et al	2014	Spain	Link between EI and death anxiety, self-esteem and alexithymia	Cross-sectional and observational study	1208 nursing students and 209 nurses	Alexithymia Self-esteem Death anxiety	TMMS 24
Augusto Landa et al	2009	Spain	Link between self-concept, personality and EI	Cross sectional study	123 nursing students	Personality Self-Concept	TMMS 24
Beauvais et al	2011	USA	Relation between EI and nursing performance	Descriptive correlational design	87 nursing students	Performance	MSCEIT
Beauvais et al	2014	USA	Relationship between EI, psychological empowerment, resilience, spiritual well-being, and academic success	Descriptive correlational design	129 nursing students	Psychological empowerment Resilience Spiritual well-being	MSCEIT
Benington et al	2020	USA	Link between EI and successful completion	Comparative descriptive study	110 nursing students	Successful completion	SSEIT
Benson et al	2012	Canada	Development of EI, leadership, and caring	Longitudinal and correlational study	52 nursing students	Leadership Caring ability	Bar-On EQ-i
Carragher et al	2016	United kingdom	Discussion on leadership and EI concept in nursing and midwifery education	Discussion paper		Leadership	
Carvalho et al	2018	Spain	Relationship between EI and well-being	Longitudinal study	303 health student (164 medicine, 45 physiotherapy, 94 nursing students)	Burnout Satisfaction de vie	Wong and Low EIS

Chan et al	2014	China	Conflict management style, personality and EI	Transversal study	568 nursing students	Organizational Conflict Personality	SEIS
Choi et al	2015	South Korea	Effect of teaching communication skills using a videoclip on communication competence and EI	Quasi experimental study	87 nursing students (45 test et 42 control)	Global interpersonal communication competence	AEQT
Cleary et al	2018		Synthesize research that explore resilience and emotional intelligence	Integrative review	14 articles included	Resilience	
Codier et al	2014	USA	Relationship between EI ability and grade point average	Exploratory, descriptive study	72 nursing students in first year	Academic performance	MSCEIT
Culha et al	2018	Turkey	Relationship amongst student nurses values, EI and individualized care perception	Descriptive and correlational study	218 nursing students	Nurses professional values Individualized care	EIAS
Di Lorenzo et al	2019	Italy	To explore EI, empathy and alexithymia	Cross-sectional survey	237 nursing students	Empathy Alexithymie	SSREIT
Donnaint	2016	France	To develop reflective practice and emotional intelligence	Qualitative study	15 nursing students		
Dugué et al	2018	France	To investigate psychological characteristics of nursing students in an attempt to understand why they are more subject to stress than others.	Descriptive and correlational study	519 students (301 nursing students, 89 sport science, 87 health students, 42 psychology)	Resilience Coping Perceived Health Personality Self-esteem Perceived Stress Risks Behaviors Chronotype	PEC
Erkayiran et al	2018	Turkey	Impact of improving EI skills training on interpersonal relationship styles	Quasi-experimental study	72 nursing students (36 test and 36 control)	Interpersonal Style	Bar-On EQ-i
Fernandez et al	2012	Australia	EI predictor of academic performance	Prospective survey design	81 nursing students	Academic performance	TEIque
Foster et al	2015		investigate the state of knowledge on emotional intelligence education in pre-registration nursing programmes.	Integrative review	17 articles included		
Foster et al	2017	Australia	To measure EI in pre-registration nursing students from program	Longitudinal study	111 nursing students	Academic performance	AES

Foster et al	2018	Australia	commencement to conclusion To measure emotional intelligence (EI) and perceived stress (PS) in final year healthcare students	Cross-sectional study	201 Students (58 nursing, 35 dentistry, 112 pharmacy)	Stress	GENOS
Foster & McCloughen	2020	Australia	To identify the emotionally intelligent behaviours used by students in difficult interpersonal situations with the patient and family during clinical placements	Qualitative study	20 Students (12 nursing, 8 pharmacy)		GENOS
Gomez-Diaz et al	2017	Spain	To explore the effect of EI education program	Interventional study	108 nursing students	Training	TMMS
Goudarzian et al	2019	Iranian	Effect of self-care education on EI	Quasi-experimental study	60nursing students	Training	EII
Guo et al	2019	China	Relationship with EI, self-efficacy and academic procrastination	Cross sectional study	347 nursing students	Self-efficacy Procrastination	EIS
Hajibabae et al	2018	Iranian	relationship between empathy and EI	Transversal, descriptive and correlational study	320nursing students	Empathy	SSEIT
Hasanpour et al	2018	Iranian	Relationship between EI and critical thinking	Descriptive and correlational study	169 nursing students	Critical Thinking	Bar-On EQ-i
Hurley et al	2019	Australia	Understand students used the knowledge and capabilities from the training in clinical placement	Qualitative study	12 nursing students	Training	GENOS
Kaya et al	2017	Turkey	The relationship between critical thinking and emotional intelligence in nursing students	Longitudinal design	197 nursing students	Critical Thinking	EIAS
Kaya et al	2018	Turkey	The relationship between critical thinking and emotional intelligence in nursing student	Longitudinal study	182 nursing students	Critical Thinking	EIAS

Kim & Shin	2021	South Korea	Relationship between academic achievement and social-emotional competence	Cross-sectional study	195 nursing students	Critical thinking Self-directed learning Creativity Problem solving Collaboration Clinical performance Subjective academic achievement	WLEIS
Kong et al	2016	China	To explore whether resilience moderate the relationship between EI and clinical communication ability	Cross-sectional design	377 nursing students	Resilience Clinical communication ability	EII
Lana et al	2015	Spain	To explore relationship between EI and health risk behaviors	Cross sectional study	275 nursing students	Health risk behaviors	SSRI
Lewis et al	2017		Synthesize research that explore affective events in nurse education and emotional intelligence	Narrative review	10 articles analyzed	Affective events	
Li et al	2015	China	To investigate the relationships among post-traumatic growth, emotional intelligence and psychological resilience in vocational school nursing students who have experienced childhood adversities	Cross sectional study	202 nursing students	Resilience Posttraumatic growth Childhood Adversities	EIS
Marvos et al	2015	USA	To explore relationship between EI and clinical performance/retention	Exploratory and descriptive study	104 nursing students	Retention Clinical performance	MSCEIT
McCloughen et al	2018	Australia	To identify interactions between EI and behaviours to manage challenging interpersonal situations with staff during clinical placement	Qualitative study	20nursing and pharmacy students in last year	Training	GENOS
Montes-Berges et al	2007	Spain	Exploring the relationship between perceived EI coping, social support and mental health	Cross sectional study	119 nursing students in first year	Coping Social support Mental health	TMMS
Orak et al	2016	Iranian	Investigating the effect of emotional intelligence education	Quasi-experimental study	66 nursing students in first year (31	Training	MSEIS



Por et al	2011	United Kingdom	program To explore the relationship between EI, coping, well-being and professional performance	prospective correlational survey	test and 35 control) 130 nursing students	Stress Coping Academic performance Satisfaction with life Nursing competence	SEIS
Ramadan et al	2020	Egypt	Measure the effects of and EI program on the clinical performance	Quasi-experimental study	100 nursing students	6-DSNP (clinical performance)	SSEIT
Ruiz-Aranda et al	2014	Spain	To examine the relationship between emotional intelligence (EI) and well-being indicators	Descriptive and correlational study	264 female students (38,3% Physiotherapy, 33,3% nursing, 17% of occupational therapy and 11,4% of chiropody)	Stress Satisfaction with life Subjective happiness	MSCEIT
Sanchez-Exposito et al	2018	Spain	To explore the relationship between social-emotional skills and clinical practice performance	Descriptive and transversal study	91 nursing students in last year	Health communication skills State-trait anxiety Coping Self-efficacy Motivation to succeed Work engagement	
Senyuva et al	2014	Turkey	Relationship between self-compassion and EI	Cross sectional study	571 nursing students	Self Compassion	EIAS
Shahbazi et al	2018	Iranian	Effects of problem-solving skill training on EI	Quasi-experimental study	43 nursing students (20 test and 23 control)	Training	Bar-On EQ-i
Shanta et al	2014	USA	investigated if baccalaureate-level nursing education increased the level of EI as operationalized by J. D. Mayer and P. Salovey's (2004) four-branch abilities model.	Quasi-experimental and quasi-longitudinal study	251 students (67 test)	Academic performance	MSCEIT
Sharon et al	2018	Israel	To explore influence of EI on the degree success		110 nursing students	Academic performance	SSRI

Stenhouse et al	2016	United Kingdom	To explore impact of previous caring experience, and EI on academic success	Longitudinal quasi experimental design	598 students	Academic performance	SEIS TEIQue SF
Singh et al	2020		Relationship between EI and academic performance in medical, dental and nursing students	Systematic review	25 articles (7 on nursing)		
Szeles	2015	USA	Effect of EI program in student nurse leaders	Mixed method exploratory study	13 nursing students	Training	MSCEIT
Teskereci et al	2020	Turkey	Effect of EI and compassion program	Quasi-experimental study	73 nursing students	Training	EIES
Yildirim et al	2021	Turkey	Relationships between EI and leadership orientations	Cross-sectional and descriptive study	320 nursing students	Leadership orientations	EIES
Zhang et al	2016	China	To explore the mediating role of EI between negative life events and psychological distress	Cross sectional study	467 nursing students	Life events Psychological distress	C-EIS-R

AEQT, Adult Emotional Quotient Test (Moon, 1997) ; AES, Assessing Emotions Scale (Schutte et al., 1998) ; Bar-on EQ-i, Bar-On Emotional Quotient-Inventory (Bar-On, 2004); BGEII, Bradbury-Graves's Emotional Intelligence Questionnaire Inventory (Gangi et al., 2006); C-EIS-R, Chinese Emotional Intelligence Scale (Chan, 2003) ; EIAS, Emotional Intelligence Assessment Scale (Ergin, 2000) ; EII, Emotional Intelligence Inventory (Bradbury & Graves, 2005) ; EIS, Emotional Intelligence Scale (Schutte et al., 1998) ; EIES, Emotional Intelligence Evaluation Scale (Hall, 2005) ; GENOS, GENOS Emotional Intelligence Inventory (Gignac, 2008) ; MSCEIT, Mayer-Salovey-Caruso Emotional Intelligence Test (Mayer et al., 2002); MSEIS, Modified Schutte Emotionnel Intelligence Scale (Austin et al., 2004) ; PEC, Profile of Emotional Competence (Brasseur et al., 2013) ; SEIS, Schutte Emotional Intelligence Scale (Schutte et al., 1998) ; SSRI, Schutte Self-Report Inventory (Schutte et al., 1998) ; SSEIT, Schutte Self Report Emotional Intelligence Test (Schutte et al., 1998) ; TEIQue, Trait Emotional Intelligence Questionnaire (Petrides, 2009) ; TEIQue-SF, Trait Emotional Intelligence Questionnaire (Petrides, 2009) ; TMMS, Trait Meta-Mood Scale (Salovey et al., 1995); Wong & Law EIS, Wong & Law Emotional Intelligence Scale (Wong & Law, 2002).